

Determinant Analysis of Obesity among Adult Females in Egypt

Raouf Alebshehy¹, Nura Musa Shuaib², Jato Denis Mbako³, Dina Barffo⁴ and Roland KuuzagrNuoto⁵

¹Department of Preventive Medicine, Ministry of Health, Egypt, ² TB and Leprosy, Ministry of Health, Nigeria, ³Integrated Health for All Foundation, Cameroon, ⁴Ghana Health Service, Ghana, and ⁵Kintampo College of Health, Ministry of Health, Ghana

Corresponding author: Raouf Alebshehy, dr.ebsh@yahoo.com, +21221253003

ABSTRACT

Background: obesity is a major and growing health problem that affects developed, and developing countries. It has many health, financial, and social consequences. Therefore, addressing obesity tops the World Health Organization's public health agenda. In Egypt, there is a remarkable increase in obesity with more than one third of the whole population being obese. A particular issue in Egypt is that prevalence of obesity is more than double among females (46%) as compared to males (22%). Moreover, there is no national program to address the problem, and 95% of females are not taking any measures to change their weight. Despite the major gender gap in obesity prevalence, little research has examined gender differences in its determinants. Therefore, this study aims to analyse determinants of adult Egyptian female obesity.

Methods: this study is an in-depth review based on secondary data collection. A conceptual framework was developed to analyse the determinants. Data is obtained from different resources such as key health databases such as PubMed, Global health, and websites of relevant institutions such as World Health Organization, and Egypt's Ministry of Health. **Findings:** the study has revealed the huge burden of obesity among women in Egypt. It shows that obesity among Egyptian females increases with age, wealth, urban residency, unhealthy diet, and physical inactivity. It revealed the growing trend of obesity among poor and rural people. It also discussed other sectors of influence that lead to higher obesity rates such as urbanization, and levels of education.

Key words: Obesity, female, Egypt

INTRODUCTION

Obesity is dramatically growing in Eastern Mediterranean Region including Egypt. The prevalence of overweight and obesity, in this region, ranges from 74% to 86% among females and 69% to 77% among males ^[1]. Egypt underwent a process of epidemiologic transition with a remarkable increase of non-communicable diseases ^[2]. Therefore, non-communicable diseases are the leading causes of Egypt's Disability Adjusted Life Years and Years of Life Lost ^[2]. The last STEPS survey conducted in Egypt was in 2011-2012, a multistage cluster sample study, and showed that approximately 30% of adult Egyptians aged 25 to 64 years are obese ^[3]. Many chronic diseases have increased in parallel with obesity such as cardiovascular diseases, and diabetes mellitus ^[4, 5].

A particular problem in Egypt is that obesity prevalence is more than double among females as compared to males ^[3, 6, 7]. For example, 46% of females as compared to 22% of males [in a representative survey of 10,000 aged 15-65 years] are obese ^[6]. Similarly, women aged 25-64 years had a 41% prevalence of obesity as

compared to 22% in men in last STEPs survey ^[3]. Moreover, a study of 1,502 adolescents attending public schools in Egypt revealed that 26% of girls and 13% of boys are overweight or obese ^[7].

Furthermore, Egyptian adult females' obesity (BMI ≥ 30 kg/m²) and severe obesity (BMI ≥ 35 kg/m²) raised from the twelfth and the tenth highest in the world in 1975 to the seventh and the sixth highest in 2014 respectively ^[8]. In a study based on Egyptian Demographic and Health Surveys, it was found that between 1995 and 2005, the mean BMI of reproductive aged females increased from 26.31 to 28.52 ^[9]. Moreover, it reached 29.2 in 2008 ^[10]. Additionally, the Egyptian Demographic and Health Survey of 2008 showed that about 66% of married females aged 25-29 suffered overweight or obesity ^[11]. Additionally, according to World Health Organization, Egypt has the fifth highest percentage of obese women in the world over the age of fifteen ^[12]. It is estimated that 75% of Egyptian females, over the age of 30, are overweight or obese ^[13]. The Survey of Young People in Egypt, which covers a nationally representative sample of

15,029 young people aged 10-29, showed that 95% of females are not taking any measures to reduce their weight ^[11]. This problem negatively affects individual output and Egypt's overall development. A possible cause of this problem is the existence of different determinants that contribute to Egypt's adult females' obesity. Despite the higher prevalence of obesity among Egyptian females compared to males, little research has examined determinants of obesity among females ^[14]. This review sought to investigate the determinants contributing to adult females' obesity in Egypt.

METHODOLOGY

This Study involved analysis of the determinants of Egypt's adult females' obesity from secondary data. Data was collected by searching published literature, and by following a framework of determinants' analysis.

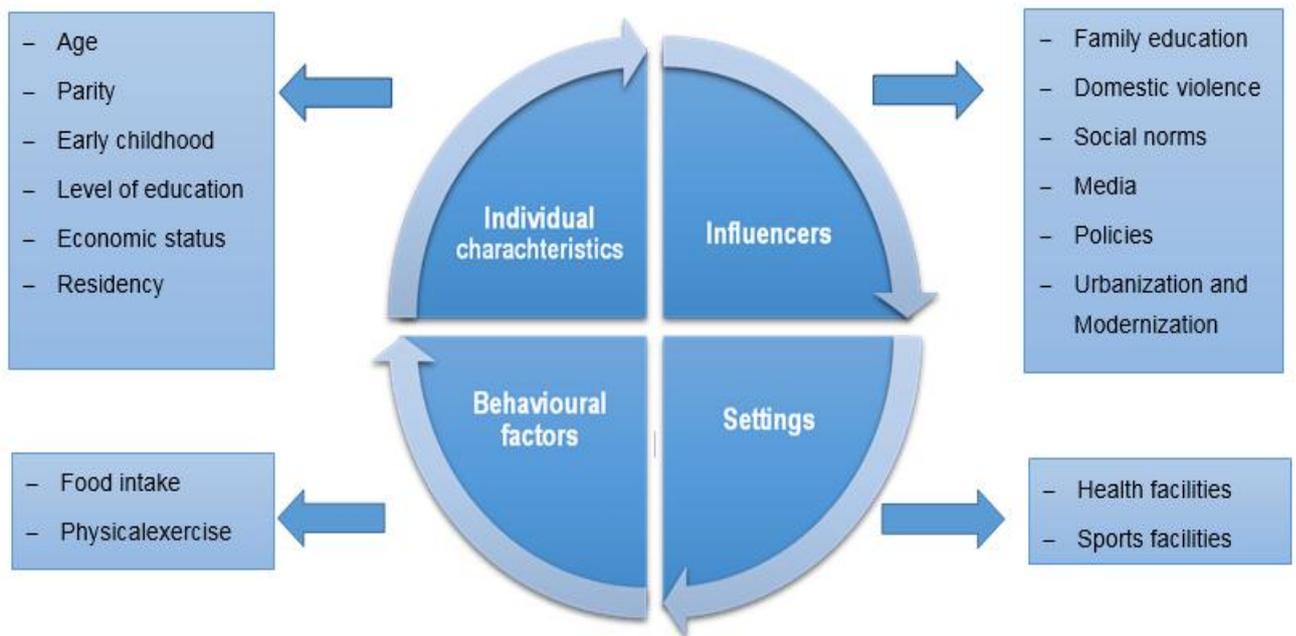
Framework

Obesity is not a straight forward health problem, and there is no single solution to it. Therefore, all obesity determinants should be analysed in a specific context, in order to find

the appropriate contextual solutions ^[15]. Moreover, many factors contribute to obesity in Egypt ^[16]. Therefore, after reviewing the published literature about determinants of adult females' obesity in Egypt, frameworks were searched. However, no single framework covers all the discussed determinants. Therefore, two frameworks were adjusted to develop final framework for determinants' analysis.

The framework [figure 1] is developed by the author based on McLeroy *et al.* ^[17], and Koplan *et al.* ^[18], in addition to other factors published about determinants of obesity in Egypt. It consists of four main groups of obesity determinants. The first group is individual characteristics, which are age, parity, early childhood, level of education, economic status, and residency. The second group is behavioural patterns regarding food intake and physical exercise. The third group includes obesity-related settings in Egypt's context, which are health and sports facilities. The fourth group consists of obesity influencers, which are family education, domestic violence, social norms, media, policies, urbanization, and modernization.

Figure 1: Obesity determinants' analysis framework



Author: based on McLeroy *et al.* ^[17], and Koplan *et al.* ^[18].

Searching published literature

Data was obtained from key health databases; PubMed, Global health, Medline, Popline, and Web of science. Relevant words, and truncations were used. Full-text articles written in English or Arabic, including data about adult females' obesity, in Egypt's context, were included. However, articles written in other languages, articles with subject bias, or articles available with abstract only were excluded. Additionally, Leeds University library and its website, and Google scholar search engine were searched for relevant articles. Key terms used and findings are clarified in tables 1. The final 12 articles of databases search, in addition to 41 articles from other sources, were used in this study, reaching a total of 53 references.

Table 1: Databases searches

Keywords and limitations		Findings				
		PubMed	Global health	Medline	Popline	Web of science
1	obese* OR overweight OR weight gain	333877	123810	267801	5293	383216
2	determinant* OR cause* OR risk factor*	2689463	480098	2149498	316566	3140341
3	female* OR women OR woman OR girl*	7529752	385135	5205931	175761	1842040
4	Egypt OR EMRO OR Arab OR Middle east	196376	71946	23798	14171	91942
5	1 and 2 and 3 and 4	1855	759	268	90	233
7	After exclusion and inclusion criteria	12				

DISCUSSION

Individual characteristics

Age

In a study based on 1995 and 2005 Egyptian Demographic and Health Surveys, Austin *et al.* [9] found that increasing BMI is associated with aging in Egypt. The increasing trend of female obesity reaches its maximum at the age of 45-54 years, when 62% of females become obese, which is more than triple the percentage of female obesity at the age of 15-24 years [6]. Moreover, Egypt is undergoing a process of demographic transition with an increase in numbers of old age population leading to an epidemiologic transition and increase in percentage of obese people, consequently more adult females' obesity [19, 20, 21].

Parity

Austin *et al.* [9] found that obesity is associated with parity among Egyptian females. Pregnancy may contribute to obesity through decreasing the ability of participation in strenuous activity. Moreover, cultural concepts such as the pregnant female should eat for two is also a risk factor for obesity. Furthermore,

postpartum depression majorly contributes to obesity [4].

Early childhood

Healthy childhood is one of the main basis of healthy adulthood [22]. For instance, undernourished children are more liable to obesity in later life if conditions changed [23]. Moreover, Egypt is among the highest twenty countries with children chronic malnutrition, and prevalence of underweight children is increasing; it reached 29% in 2008 [24]. Therefore, an increasing trend of obesity is expected.

Level of education

Egypt has more than 10 million illiterate females aged ≥ 10 years [25]. Moreover, Mowafi *et al.* [26] found that Egyptian females with a high school or less level of education are three times less likely to be normal weight than women with higher levels of education. Additionally, in a study of 49,058 Egyptian females, based on 1992, 1995, 2005 and 2008 Egyptian Demographic and Health Surveys, Aitsi-Selmi *et al.* [27] found that although

overall trend of obesity is increasing, the rise in prevalence occurring among less educated people is higher than the trend among educated ones. However, Austin *et al.* [9] found that prevalence of obesity is still higher among literate Egyptian females as compared to illiterate ones.

Economic status

Wealth could positively or negatively affect food consumption. In Egypt, 32% of the highest wealth quintile (WQ) eat fruits more than three times a week compared with 13% among the lowest WQ. While 42% of the highest WQ consume carbonated drinks and fast food more than three times a week compared with 14% in the lowest WQ [11]. Moreover, perception of obesity is associated with wealth level. For instance 10% of the highest WQ consider themselves overweight compared with 5% in the lowest WQ, while 4.5% of the highest WQ started measures of weight control compared with 2% in the lowest WQ [11].

A study of 3993 households in Egypt's capital revealed that all economic levels are affected by obesity [26]. Although obesity prevalence is almost double among wealthy Egyptian females, it is increasing at a faster pace among poorer people [9, 10, 27]. All economic levels have their own obesity risk factors, for example women in the highest WQ consume more than double the sugary foods as compared to those in the lowest WQ [10]. However, subsidized high-energy food forms the highest proportion of poor Egyptians' diet, which is one of the main determinants of the growing trend of obesity among them [9]. Additionally, most foods, rich in carbohydrates, are inexpensive [28].

Residency

In Egypt, high obesity prevalence is more associated with urban residence, however its trend is increasing at rapid pace in rural areas [9, 27]. Prevalence of female obesity varies in different parts of Egypt as it ranges from 25% in rural Upper Egypt to 49% in urban Lower Egypt [10].

Both rural and urban areas have risk factors of obesity. For example, the consumption of carbonated drinks and fast food is higher among urban areas' residences with 17% of their youth consuming these products more than three times a week compared with 8% of

those in rural areas [11]. Rural residences depend on subsidized high energy food in their diet [9]. Although the rate of female activity is generally low in Egypt, females are least likely to be economically active in rural Upper Egypt [11]. Moreover, amount and types of food expenditure varies among different parts of Egypt [28].

Behavioural factors

Food intake

High energy food is predominant in Egyptians' diet. In 2001, Egypt was the highest in daily calories intake when compared with both developed and developing countries [28]. Egypt's nutritional context has a variety of high energy diet availability [5]. Moreover, carbonated drinks and fast food are common among young people [11].

Furthermore, ingestion of a high-fat diet is a risk factor for overweight and obesity [29]. Fatty food is overconsumed in Egypt [30]. It is estimated that 64% of Egyptian households use vegetable oil, 55% use margarine, 38% use butter, and only 4% use olive oil (total percent is not 100% because some households use more than one type of oil) [6].

Additionally, consumption of a certain type of bread called "*Balady*" is directly associated with increasing weight of Egyptian females [16]. However, Egyptian government runs a food subsidized program of that bread and other commodities [28]. Furthermore, the survey of young people showed that 70% of Egyptian aged 10-29 years consume that type of bread [11].

Fruits and vegetables are believed to have preventive effects on body weight gain according to most prospective cohort studies [31]. In some settings of Egypt, fruits are considered luxuries [28]. The last Egyptian STEPS survey 2011-2012 showed that 97% of females, aged 25-64 years, eat ≤ 5 fruits and/or vegetables a day [3]. Additionally, only 21% of adult females eat ≥ 5 types of fruit and vegetables a day [6]. Moreover, mean number of days per week that females consume fruit and/or vegetable is 4 and mean number of fruit and/or vegetable servings is 1.2 times a day on days consumed [6].

Salt intake is strongly associated with obesity [32]. However, Egypt is known for its overconsumption of salty foods [30]. Egyptian females are more likely to prefer salty food than males [11]. Moreover, eating habits, such

as high consumption of snacks, sweets, and fried food in addition to infrequent intake of breakfast and eating while watching TV, were found to be associated with obesity in a cross-sectional study of 138 overweight and obese Egyptian females^[33].

Physical exercises

Physical inactivity is a main cause of obesity as it causes an energy imbalance between calories intake and expenditure^[34]. World Health Organization, recommends that adults at the age of 18-64 years should do at least 150 minutes of aerobic physical activity a week for healthy maintenance of weight^[35]. It also recommends that adults should increase their physical activity to 300 minutes a week in order to have additional health benefits such as weight loss^[35].

Generally, most Egyptians live a quite sedentary life especially in urban cities^[5]. Moreover, around 60% of adult Egyptian females do not work and only 23% of them are governmental employees^[6]. Female youth participation in labour force is 13.5% which is much lower than their male counterparts with 61.5% participation^[11].

The Survey of Young People in Egypt showed that much fewer females than males are involved in daily physical activities such as biking, going to a gym, playing sports or having a job which requires physical efforts. Moreover, most over 18 years and married women do not engage in any physical activity^[11]. Furthermore, 70% of women aged 15-65 years conduct daily physical activity of fewer than 10 minutes^[6]. According to World Health Organization, 42% of Egyptian females, aged 25-64 years, have low physical activity^[3].

Settings

Health facilities

Egypt has more than 5000 primary healthcare clinics and offices^[30, 36]. These clinics usually have general practitioners, who have received training in medical schools, however they do not give any kind of systemic advice to patients about health risk factors such as obesity^[37]. Furthermore, there are no nutrition or diet clinics in either public primary or secondary healthcare facilities in Egypt^[38].

Sports facilities

The Egyptian constitution [Article 84] states that practicing sports is a right for all

Egyptians^[39]. Despite the huge urbanization process in Egypt, there are still areas appropriate for physical activity^[40]. Additionally, Egypt has 2793 sports facilities^[41]. However, a study of 1708 Egyptian university students revealed that lack of accessible and suitable sporting places is one of the most major barriers to physical activities^[42].

Influencers

Family education

Mowafi *et al.*^[26] found that Egyptian females, whose fathers had a high school or lower level of education, have twice the probability of being obese compared with those whose fathers had higher levels of education.

Domestic violence

A study of 5015 Egyptian females aged 15-49 years revealed that prevalence of obesity among females who are exposed to psychological, physical, or sexual domestic violence is higher than their counterparts^[43]. Moreover, 39% of Egyptian women believe that wife beating by husband would be justified when wife goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food when cooking^[10]. Additionally, in a survey performed by the Egyptian Ministry of Health and Population, almost 50% of females said that they had experienced some form of domestic violence^[44].

Social norms

Although in Egypt, plumpness was seen as a sign of women beauty^[16], this has changed and thinner females are now considered more attractive^[45]. However, there are no advocacy groups or community involvement in addressing the problem of obesity.

Furthermore, the culture in some settings of Egypt such as Upper Egypt is very conservative and sensitive towards giving women opportunities to do physical exercises in places that include both genders. Therefore, the project of establishing a "female only" sports' facility, in governorate of Qena in 2003, achieved a great success^[46]. However, this project was not replicated in other parts of Egypt since that time.

Media

There is evidence that television viewing is a major contributor to obesity. Studies have revealed a direct association between times spent watching television and body weight. That is because television promotes sedentary lifestyles, more food intake, and advertisements of unhealthy food [47]. Additionally, those who watch cooking shows for inspiration are at higher risk of obesity than others. Those who cook from scratch following cooking shows' instructions have higher BMI than those who have learned to cook from other sources such as magazines or friends [48]. In Egypt, cooking shows have become a phenomena, as nowadays many channels are broadcasting these shows 24 hours a day [49].

Policies

Obesity is a national health problem in Egypt, yet there is no national program implemented to tackle it. Additionally, the Egyptian governmental policies have majorly contributed to Egyptian obesity. For example absence of policies that regulate food advertisements and marketing campaigns have contributed to the change of Egyptians food intake pattern. Therefore, snacks, processed foods, and soft drinks have become common among all age and income groups [4].

The Egyptian government's food subsidy policy has majorly contributed to the increasing trend of obesity. For more than 25 years, the government has subsidized high calories and low micronutrient food such as bread, wheat flour, sugar and cooking oil. Furthermore, 80% of Egyptians have access to food subsidy cards, which ensures high calories intake for majority of population [26,50,51].

Urbanization and Modernization

The escalating rate of obesity is one of the major outcomes of modernization. That is because modernization pushes towards sedentary lifestyle by providing people with motorized transport, mechanized equipment, and labour-saving devices [52]. Studies showed that people living the traditional lifestyle, gain no weight with age, however during the last 60 years, modernization has led to energy imbalance due to lack of physical activities, increasing the prevalence of obesity [52]. Egypt is considered an over-urbanized country as many of its population have moved from

traditional farming life to the urban modernized life [53]. The Egyptian increasing trend of obesity is associated with the context of urbanization and abundant food availability [4].

CONCLUSION

This study has revealed the huge burden of obesity in Egypt. The prevalence of obesity is almost double among females as compared to males. It showed that obesity among females is increasing with age, wealth, urban residency, unhealthy diet, and physical inactivity. It also revealed the rapid pace of its increasing prevalence among poor people and rural residences. It also discussed other factors that influence obesity occurrence such as urbanization, and levels of education.

AUTHORS' CONTRIBUTIONS

Raouf Alebshehy is the main author of this study. Co-authors; Shuaib, Jato, Barffo, and Kuuzagr have participated in the study by reviewing, editing, and correcting the content of the article. The final manuscript has been read and approved by all the authors.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

REFERENCES

1. **World Health Organization (2015):** Obesity. Available from: <http://www.emro.who.int/health-topics/obesity/>
2. **Institute for Health Metrics and Evaluation (2010):** GBD profile: Egypt. Available from: <http://www.healthdata.org/egypt>
3. **World Health Organization (2016):** STEPwise approach to chronic disease risk factor surveillance. Available from: <http://www.who.int/chp/steps/egypt/en/>
4. **Torre P, León D, Mora F, Salinas A, Renee Robinson R and Refaat A (2014):** Women and Health Learning Package. Third edition.: Women and Health Taskforce. Available from:

- <http://www.ghets.org/wp-content/uploads/2014/11/2015-Nutrition-and-Womens-Health>.
5. **Galal O (2002):** The nutrition transition in Egypt: obesity, undernutrition and the food consumption context. *Public Health Nutrition*, 5(1): 141–148
 6. **Ellabany E and Abdel Nasser M A (2006):** Community based survey study On Non-communicable diseases and their Risk Factors, Egypt. Available from: http://www.who.int/chp/steps/STEPS_Report_Egypt_2005-06.
 7. **Salazar-Martinez E, Allen B, Fernandez-Ortega C, Torres-Mejia G, Galal O and Lazcano-Ponce E (2006):** Overweight and Obesity Status among Adolescents from Mexico and Egypt. *Archives of Medical Research*, 37(4): 535-542.
 8. **Ezzati M (2016):** Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19.2 million participants. *The Lancet*, 387(10026): 1377-1396.
 9. **Austin A, Hill A and Fawzi W (2011):** Maternal obesity trends in Egypt 1995-2005. *Maternal & Child Nutrition*, 9(2): 167-179.
 10. **El-Zanaty F and Way A A (2009):** Egypt Demographic and Health Survey 2008. Available from: <http://dhsprogram.com/pubs/pdf/fr220/fr220>.
 11. **Population Council (2011):** Survey of young people in Egypt. Available from: http://www.popcouncil.org/uploads/pdfs/2010PG_Y_SYPEFinalReport.pdf
 12. **World Health Organization (2008):** World health statistics 2008. Available from: http://www.who.int/whosis/whostat/EN_WHS08_Full.
 13. **National Nutrition Institute (2012):** Obesity. Available from: http://www.nni.org.eg/obesity_ar.htm
 14. **American Public Health Association (2013):** Gender differences and determinants of obesity in Egypt. Available from: <https://apha.confex.com/apha/>
 15. **Albar S (2011):** Preventing overweight and obesity among schoolchildren in Saudi Arabia. Master thesis, University of Leeds
 16. **Shahin H (2015):** Obesity interventions in Egypt: identifying gaps and highlighting assets. Master thesis, The American University on Cairo
 17. **McLeroy K, Bibeau D, Steckler A and Glanz K (1988):** An Ecological Perspective on Health Promotion Programs. *Health Education & Behavior*, 15 (4): 351-377.
 18. **Koplan J, Liverman C, Kraak V and Wisham S (2007):** Progress in preventing childhood obesity. Washington, D.C.: The National Academic Press
 19. **World Health Organization (2015):** Geriatric care facilities provide tailored services for Egypt's ageing population. Available from: <http://www.emro.who.int/egy/>
 20. **United Nations Population Fund (2007):** Population Ageing. Available from: <http://egypt.unfpa.org/>
 21. **Saxena P C (2008):** Ageing and age-structural transition in the Arab countries: Regional variations, socioeconomic consequences and social security. *Genus*, 64: 37-74.
 22. **Marmot M and Wilkinson R G (2003):** Social Determinants of Health: the solid facts. 2nd ed. Copenhagen: WHO Regional office for Europe. Available from: <http://www.euro.who.int/>
 23. **Nahmias P (2007):** Trends in the prevalence of overweight among women in Egypt. Available from: <http://paa2008.princeton.edu/papers/80605>
 24. **United Nations Children's Fund (2010):** Nutrition. Available from: <http://www.unicef.org/egypt/>
 25. **Albawaba (2013):** Illiteracy in Egypt reaches 16 million. Available from: <http://www.albawaba.com/editorchoice/egypt-illiteracy-female-520546>
 26. **Mowafi M, Khadr Z, Kawachi I, Subramanian S, Hill A and Bennett G (2014):** Socioeconomic status and obesity in Cairo, Egypt: A heavy burden for all. *Journal of Epidemiology and Global Health*, 4(1):13-21.
 27. **Aitsi-Selmi A, Chandola T, Friel S, Nouraei R, Shipley M and Marmot M (2012):** Interaction between Education and Household Wealth on the Risk of Obesity in Women in Egypt. *PLoS ONE*, 7(6): 39507.
 28. **Dawoud S (2005):** An Analysis of Food Consumption Patterns in Egypt. Doctoral thesis. University of Kiel.
 29. **Wiesner S and Jordan J (2009):** Managing Obesity: General Approach and Lifestyle Intervention. In: Williams, G. and Fruhbeck, G. eds. *Obesity Science to Practice*. United Kingdom: Wiley-Blackwell, pp.393-411.
 30. **World Health Organization (2010):** Country Cooperation Strategy for WHO and Egypt 2010–2014. Available from: http://www.who.int/countryfocus/cooperation_strategy/ccs_egy_en.pdf
 31. **Tetens I and Alinia S (2009):** The role of fruit consumption in the prevention of obesity. *The Journal of Horticultural Science and Biotechnology*, 84(6): 47-51.
 32. **Karppanen H (2006):** Salt intake is strongly associated with obesity. *Eurekalert*. Available from: <http://www.eurekalert.org/>
 33. **Hassan N E, Wahba S A, El-Masry S A, Elhamid E R A, Boseila S A, Ahmed N H and Ibrahim T S (2015):** Eating Habits and Lifestyles among a Sample of Obese Working Egyptian

- Women. Open Access Macedonian Journal of Medical Sciences, 3(1): 12.
- 34. World Health Organization (2015):** Obesity and Overweight. Available from: <http://www.who.int/mediacentre/factsheets/fs311/en/>
- 35. World Health Organization (2010):** Global recommendations on physical activity for health. Available from: http://apps.who.int/iris/bitstream/10665/44399/1/9789241599979_eng.pdf
- 36. Ministry of Health and Population (2016):** Hospitals guide. Available from: <http://www.mohp.gov.eg/Guidelines/hospitals.aspx>
- 37. European Association for Cardiovascular Prevention and Rehabilitation (2014):** Country report Egypt – October 2014. Available from: <https://www.escardio.org/>
- 38. Ministry of Health and Population (2003):** Egypt health sector analysis and future strategies. Cairo: Al Ahram Press.
- 39. State Information Service (2014):** The Egyptian Constitution. Available from: <http://www.sis.gov.eg/Newvr/consttt%202014.pdf>
- 40. Nassar U (2015):** Urban space design to enhance physical activities and motivate healthy social behavior in Cairo, Egypt. International Conference on Education and Social Sciences, 2-4 February 2015, Istanbul. Turkey: International Organization Center of Academic Research. Pp1137-1147
- 41. Egypt's Ministry of Youth and Sports (2016):** Stadiums and sports clubs. Available from: http://www.emss.gov.eg/all_clubs.php
- 42. El-Gilany A, Badawi K, El-Khawaga G and Awadalla N (2011):** Physical activity profile of students in Mansoura University, Egypt. Eastern Mediterranean Health Journal, 17 (8): 694
- 43. Yount K and Li L (2010):** Domestic violence and obesity in Egyptian women. Journal of Biosocial Science, 43(01): 85-99.
- 44. Amnesty International (2015):** "Circles of hell:" Domestic, Public and State Violence Against Women in Egypt. Available from: <http://www.amnestyusa.org/research/reports/circles-of-hell-domestic-public-and-state-violence-against-women-in-egypt>
- 45. Musaiger A and Al-mannal M (2013):** Association between exposure to media and body weight concern among female university students in five Arab countries: a preliminary cross-cultural study. Journal of Biosocial Science, 46(02): 240-247.
- 46. Alhadad A (2014):** Qena Girls' club allows them to do what is prohibited in Upper Egypt. Almandara. Available from: <http://www.mandaraonline.com/>
- 47. Boulos R, Vikre E, Oppenheimer S, Chang H and Kanarek R (2012):** ObesiTV: How television is influencing the obesity epidemic. Physiology & Behavior, 107(1): 146-153.
- 48. Bratskeir K (2015):** Watching Cooking Shows Could Lead To Weight Gain. Huffington post. Available from: <http://www.huffingtonpost.com/>
- 49. Mohamed R (2015):** Egypt's channels raise the motto "welcome cooking shows". Alhaiah. Available from: <http://www.alhayat.com/m/story/12960734>
- 50. Asfaw A (2007):** Do Government Food Price Policies Affect the Prevalence of Obesity? Empirical Evidence from Egypt. World Development, 35(4): 687-701.
- 51. Asfaw A (2007):** Micronutrient deficiency and the prevalence of mothers' overweight/obesity in Egypt. Economics & Human Biology, 5(3): 471-483.
- 52. World Health Organization (2000):** Obesity: preventing and managing the global epidemic. Available from: file:///C:/Users/hs15mam.DS/Downloads/WHO_TRS_894.pdf
- 53. Abu-Lughod J (1965):** Urbanization in Egypt: Present State and Future Prospects. Economic Development and Cultural Change, 13(3): 313-343.