RESEARCH COMMUNICATION

Prevalence of Obesity among Women in Turkey: Analysis of KETEM data

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Abstract

> __Background & Purpose:__ Determining the prevalence of obesity is a crucial step in combating with obesity and devising national health strategies. It is particularly important to better understand prevalence of obesity among women as women in Turkey also highly impacts the dietary habits of the whole household. This article determines the prevalence of obesity among adult women in the country. __Patients & Methods:__ Each Cancer Early Diagnosis and Screening Center were asked to submit data on BMI indices for women who visited the centers between January and June 2011. The data were collected on January 1 and July 1 first for each respective quarter. Patients ranged between 30-65 years old. World Health Organization guidelines on BMI cutoffs were used to determine the prevalence of obesity and overweight. __Results:__ The prevalence of obesity of adult women aged 35-60 was found to be 35%. The highest prevalence was observed in Western part of Turkey in the Aegean region with 42% of women with BMI over 30. The lowest rate was observed in the Eastern Turkey with 21% obese women, followed by 28% in Southeastern Turkey. __Conclusion:__ The prevalence of obesity among adult women in Turkey is very comparable to some of the other countries with highest rates of obesity in the world. Women specific health strategies against obesity should be devised.

Keywords: Turkey - women - obesity - overweight - prevalence

Introduction

In today's world, obesity is no longer defined as a syndrome of wealthy societies; it is rather defined as a serious ailment that needs to be treated and is considered a major public health problem (WHO, 2007). Adult obesity and overweight is recorded to be responsible for 6% of health care expenditure in Europe (WHO, 2007). In the US, diagnosis and treatment of obesity itself is 7% of health expenditure amounting to around 70 billion USD (Field et al, 2003).

Obesity is not only an ailment by itself but it is also a major risk factor for some of today's persistent chronic diseases such as diabetes and cancer (Ogden et al., 2006). Obesity's impact on the health care expenditure is therefore expected to be much higher if other chronic diseases for which obesity is major risk factor are taken into account. The other diseases for which obesity is a major risk factor include cancer, hypertension, coronary artery diseases, asthma, psychological problems, hyperlipidemia and more (Tuzun et al., 1995; Turkish Ministry of Health, 2003; Arslan et al., 1999; Branco et al., 2007). According to World Health Organization data, obesity is responsible for 80% of type 2 diabetes, 35% ischemic heart disease and 55% of hypertension and causes over 1 million deaths each year (Branca et al., 2007). Obesity is also reported to cause 25-30% of major cancers including breast, colon, endometrial and is also highly associated with gallbladder

and pancreas (Vainio et al., 2002). Recent studies have also found 14% deaths from cancer in men and 20% of deaths in women were due to overweight and obesity (Calle et al., 2003).

The World Health Organization defines overweight and obesity by using BMI cutpoints of 25 and 30 kg/m2, respectively (WHO 1995, WHO 2000). These cutpoints were recommended by a National Heart, Lung, and Blood Institute's and North American Association for the Study of Obesity Expert Committee (NIH 2000). According to these cutpoints, in 2005-2006 33.3% of all men and 35.3% of all women in the US are considered obese. According to the WHO MONICA study conducted in 6 different regions in Africa, Asia and Europe, prevalence of obesity had increased 10- 30% in the last 10 years in these regions. This indicates that obesity is becoming a more important problem every day.

The dietary habits, lack of physical activity as well as other socioeconomic factors are reported to cause obesity. Particularly in Turkey it is found in national surveys that 44% of daily energy is sourced only through bread while 58% is sourced from bread and other grain derivatives. It is also reported that consumption of fruit and vegetables are not sufficient and there is higher tendency towards fast food consumption in the urban areas especially among children and adolescents (Turkish Ministry of Health 2007 and 2002). This trend towards less healthy options demands urgent attention and interruption.

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In order to gain a better insight into the situation of obesity in Turkey, it is important to determine the prevalence of obesity. This article is the first nationwide obesity prevalence study among women aged 35-60. It is particularly important to determine the size of the problem and differences across regions in Turkey to determine proper allocation of activities and action plans. Control of obesity is an integral component in fight against cancer. Given the association between women cancers incidence and therefore mortality and obesity found in international studies, this article is important in shedding light into the size of the problem in Turkey among women, an important group which provides nutrition and impact the dietary habits of the whole household for majority of Turkish families.

Materials and Methods

Since January 2011, in each Cancer Screening and Early Diagnosis (KETEM) center, height and weight of women invited for public screening are recorded using standardized protocol and calibrated equipment. Each KETEM center was asked to report quarterly BMI data from January to June 2011. Data was collected for 4 body mass index (BMI) ranges: less than 18.5, 18.5-24.9, 25-29.9, above 30. The data was submitted to Department of Cancer Control by each center on April 1 2011 and July 1 2011. The women participated in the study aged between 30-65 years old. The women in the study included both those volunteer patients representing an opportunistic visit as well as those women invited through public cancer screening programs. 69 centers out of 84 centers were able to participate in the study. 15 centers could not participate due to lack of appropriate equipment and staff.

The respective distribution across 4 BMI ranges was calculated. A BMI measurement above 30 indicated obesity while 25-29.9 indicated overweight. A BMI measurement below 18.5 indicated under-weight and 18.5-24.9 indicated normal weight. The number of people for each city was also consolidated per regions in Turkey: Mediterranean, Aegean, Black Sea, Marmara, South East, East, Mid-Anatolia. The average of two quarters for each city was used to calculate the prevalence. The prevalence of obesity and prevalence of obesity and overweight combined were calculated for each city and region.

The obesity results were also tested for correlation with incidence of the certain cancers among women in Turkey with the latest incidence data in 2006. The associated cancers were breast, colon, endometrium, pancreas and gallbladder.

Results

Data from 69 KETEM centers indicated a total of 74,492 women screened over a 6 month period. Thirty-five (35%) of women who participated in the study had BMI above 30 while 41% of participants were overweight. Only 23% of participants were in the normal BMI range. Few regional differences were observed in the prevalence rates across Turkey. The highest prevalence was observed in Western part of Turkey in the Aegean region with 42%
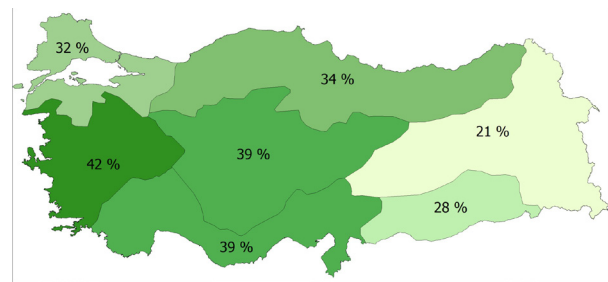

Figure 1. Prevalence of Obesity across Regions

Figure 2. Prevalence of Obesity across Cities

of women with BMI over 30. The lowest rate was observed in the Eastern Turkey with 21% obese women, followed by 28% in Southeastern Turkey. The respective rates per region can be seen in Figure 1.

Prevalence across cities had a wide variance (SD ±21): Amasya is with highest prevalence at 67% followed by Samsun, Cankiri and Burdur, all with above 60% prevalence. Other cities with above 50% obesity prevalence include Kirikkale, Nigde, Agri, Bartin, Elazig, Mardin and Manisa. The cities with the lowest prevalence included Canakkale, Edirne, Van, Diyarbakir, Ordu. The prevalence per city ranges can be seen in Figure 2. Another fact consistent across regions was the combined prevalence of overweight and obesity that reached above 64% across all regions, up to 74% in the Aegean region.

The results for the correlation between obesity across 7 regions and the incidence of breast, endometrium, colon, pancreas and gallbladder cancers among women can be seen in Figure 3a,b,c,d,e. The incidence of these cancer types have been found to be highly correlated with the prevalence of obesity. The rate at which an increase of
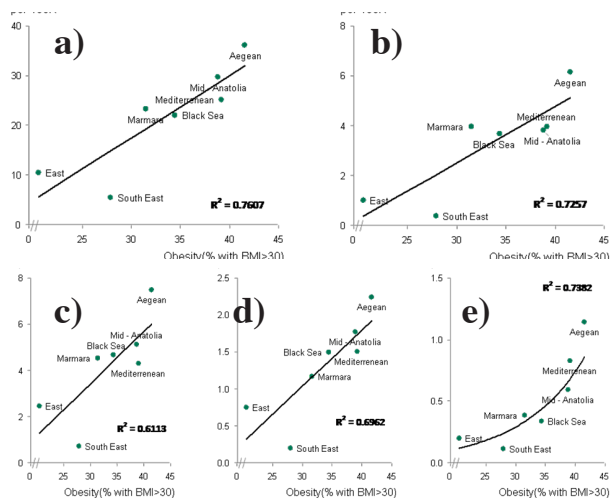

Figure 3. Correlation between Obesity among Women and Cancer Incidences. a) breast, b) endometrium, c) colon, d) pancreas and e) gallbladder

obesity impacts an increase of cancer was highest for colon, endometrium and breast cancers given the slopes of the curves.

Discussion

In this study, we have used the body mass index recommended by World Health Organization. However, the American National Heart, Lung, and Blood Institute/ North American Association for the Study of Obesity committee also suggests using waist circumference cutpoints of 40 inches (102 cm) for men and 35 inches (88 cm) for women to define ''central obesity''. More and more research in the area indicates that waist circumference or central obesity can be a more appropriate predictor of obesity-related diseases than overall obesity assessed by using BMI (Wang et al., 2005; Zhu et al. 2005). Waist circumference is also useful as it may be more understandable by the general public and easily measured. For future studies central obesity may be used as a point of comparison.

Overall prevalence of obesity of women aged 35-60 in Turkey was found to be 35%. The prevalence of overweight women with BMI between 25 and 29.9 was found to be around 41%. Study by Wang found that projected prevalence among American women above 20 years old in 2010 to be 42.5% reaching 46.4% by 2015 whereas actual prevalence was 34% in 2000. The combined prevalence for obese and overweight among women totaled 67-72% (Wang et al., 2007). The current rates compared with US indicate that obesity among women in Turkey is an extremely serious issue and demands urgent much neglected attention from health policy makers. It is extremely important to educate women in Turkey in engaging right diet and physical activity. Women are still often the ones who cook for the household and raise the children and therefore impact the dietary habits of the future generations. Health policies should not only focus on creating more physical activity for adult women today but also educate mothers to provide appropriate nutrition for their children. In line with this reasoning Ministry of Health have devised Obesity Control Program (Turkish Ministry of Health 2010). This program includes initiatives ranging from suggestions for students' lunchboxes to presenting white flag status to schools which provide recommended standards.

Although there is wide variance across some cities, overall regional differences are not highly pronounced. This might indicate a genetic tendency to gain weight as well as similarity of dietary habits common across regions such as eating white bread and intake of low fiber nutrition. Similarly, myths such as Aegean and Mediterranean regions to have a healthy diet should be further put to test and full energy intake break down should be examined across regions through nutrition surveys. Lower prevalence rates in Eastern and Southern Eastern Turkey maybe due to specific dietary habits. However, it may potentially be due to segments of population attending the study, so called a selection bias. Depending on the screening invitations sent by KETEMs, populations of different socioeconomic backgrounds from different might

have caused such bias.

Regardless of the potential fallbacks, the result that breast and colon cancers incidences are correlated to the prevalence of obesity across regions is striking. According to Turkish national screening guidelines breast cancer and colon cancer is actively screened for through population based studies. This further emphasizes the importance of coordination between obesity and cancer control efforts. Furthermore, the high correlation between prevalence of obesity and other types of cancer is noteworthy and indicates that obesity control is essential in fight against cancer.

In this study we have screened adult women aged 30-65 as per the national screening guidelines. Often obesity prevalence for ages 35-50 is different that of ages 50-60. Therefore, a randomized sampling of age segments can provide deeper insight into prevalence across different segments. For future studies, the research should be expanded to teenagers. Prevalence of risk of overweight or obese should be examined to determine future health policies to target the future generations today and devise preventive measures.

In conclusion, overall the obesity map of women across Turkey indicate around 20%-40% of adult women aged 35-60 are obese according to international standards. Due to the women's important role in Turkish family culture in raising children and preparing food for the whole family, it is crucial to design health policies targeting specifically women in order to educate them on healthy diet and necessity of physical activity. This would be an impactful way to combat many life style diseases such as diabetes and as well as cancer whose burden and mortality is second highest in the country and whose risk factors are highly associated with obesity

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Nejat Ozgul et al

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