FIGHTING OBESITY CAMPAIGN IN TURKEY: EVALUATION OF MEDIA CAMPAIGN EFFICACY

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SUMMARY

Aim: This study aims to determine the frequency of behaviour change and related factors generated in the population through the "Fighting Obesity Campaign" of the Turkish Ministry of Health.

Methods: Twelve statistical regions from NUTS-1 and 18 provinces were selected for the study sample. At least one province from each region was randomly selected, and strata were defined as urban or rural. Of the sample selected, 2,038 respondents completed a face-to-face survey. Logistic regression analysis was used to analyse the data. Changing behaviour as result of the campaign was defined as the dependent variable. Behaviour change was defined as an individual taking at least one action to increase physical activity, calculate her/his Body Mass Index (BMI) or minimise meal portions.

Results: Of the sample selected, 84% of participants lived in urban areas. Of total sample selected, 49.8% were men and 50.2% were women. According to BMI categorisation, 41.4% of participants were underweight or normal weight, 34.3% were overweight and 24.3% were obese. Of the total participants, 85.2% learned about the "Fighting-Obesity Campaign" through television, 28.1% through radio, 11.0% from newspapers, 6.0% from billboards, and 19.2% from other sources. This study revealed that 28.5% of the participants adopted desired behavioural changes after exposure to the campaign. Logistic regression results demonstrated that behaviour change is greater among women, individuals living in urban settings, group of persons approving public spots, obese individuals, and among the 20–39 age group.

Conclusion: Media campaigns may cause behavioural changes by increasing motivation to prevent obesity within the target population. Continuing these campaigns can lead to success at the national level.

Key words: obesity, media campaigns, evaluation, healthy behaviour

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INTRODUCTION

Since the second half of the 20th century, obesity prevalence has become a growing health problem due to changes in diet and lifestyle. It was reported that there are over 500 million obese individuals and approximately 1.4 billion overweight individuals around the world, and this prevalence is expected to reach 700 million and 2.3 billion, respectively, by the year 2015 (1, 2).

Obesity places individuals into a high risk group of cardiovascular diseases by causing hypertension, diabetes and atherosclerosis and subsequent higher risk of developing cancer and musculoskeletal system diseases (2). Due to the rise in obesity, increased health-related expenses and increased health problems are expected outcomes (3).

Governments are continuously searching for solutions to mitigate this situation and creating action plans to combat an obesity epidemic that threatens health worldwide (4–8). However, the fact that environmental, genetic and behavioural factors contribute to the incidence of obesity makes preventing obesity and related health effects a challenge. In addition to promoting healthy diet and increasing physical activity, the World Health Organization (WHO) recommends that governments support their action plans with culturally appropriate media campaigns (9–11). Health risks could be reduced and behavioural changes aiming at healthy weight could be achieved through such media campaigns. The main objectives of these campaigns are to promote healthy behaviours and motivate people to modify unhealthy behaviours and adopt desired behavioural changes (12, 13).

Within Turkey, obesity prevalence is 20.5% among males and 41% among females, contributing to a total prevalence of 30.3% in the country. Through the prevention of obesity on national level, experts suggest that it is possible to avert 13.3% of all deaths and 7.3% of Disability Adjusted Life Years (DALYs) (14).

Turkey aims to create public action to promote health and quality of life and to reduce the obesity prevalence by 10% by 2020. To this end, a 5-year action plan covering the years 2010–2014 was produced, and a nationwide "Fighting Obesity and Control Programme" was implemented by the Ministry of Health of Turkey (15). Within the framework of this programme, the "Fighting Obesity Campaign" (FOC) was initiated. Through FOC, obesity awareness programmes were adopted by healthcare organisations and introduced by the national media. The goal of this study is to identify the social effects of FOC.

MATERIALS AND METHODS

Study Design

The population of Turkey is approximately 74.7 million. The population above the age of 15 is 55.8 million and comprises

74.7% of the total population. Of the population above the age of 15, 71.8% live in urban areas and 28.2% live in rural areas (16). As a candidate country to the European Union, Turkey uses the Nomenclature of Territorial Units for Statistics (NUTS). NUTS comprised 3 levels of Territorial Units of Statistics; 12 were defined as Level 1, 26 as Level 2, and 81 as Level 3 (17).

The data collection stage of the research was performed between August and September 2012. A multi-stage stratified sampling method was used. A total of 18 provinces were randomly selected, including at least one province from each of the 12 statistical regions positioned in NUTS Level 1. Settlement areas with a population of more than 20,000 were defined as urban and areas with a population less than 20,000 were defined as rural regions. Rural/urban variables were defined as the strata of the study. Neighbourhoods or villages were defined as cluster variables, and households were selected from each defined cluster. Household participation in the study was defined as an interview with at least one individual aged 15 or older.

Sample size was calculated as 2,300 with a 95% confidence interval, 2% margin of error, and $p = 0.50$. Face-to-face interviews were conducted with 2,323 people. Of the 2,323 participants, 2,038 participants (87.7%) remembered the campaign and were included in the data assessments.

Survey Instruments

A questionnaire was administered after oral consent had been obtained from the participants. The questionnaire comprised three sections: the first section contained questions about socio-demographic characteristics; the second section contained questions about public media spots and whether they were well-heard, appreciated, and affected the listener; and the third section included questions about participants' level of knowledge and awareness of obesity (LKAO).

LKAO was assessed by a total of 15 survey items. Two survey items assessed participant's knowledge of the causes of obesity, 6 survey items assessed knowledge of preventative measures, and 7 items assessed participant's perceptions of the effects of obesity on society. Statements of participants were evaluated using a Likert scale. Points attributed included the following: strongly agree: 5, agree: 4, not sure: 3, disagree: 2, and strongly disagree: 1. The highest score possible was 75, and the lowest 15. The scores were divided into two clusters by K-Means clustering analysis. These clusters were used as a reference, the scores obtained were assessed by Roc Analysis, and cut-off values were calculated.

Adopting the desired post-campaign behavioural changes was defined as a participant reporting that he or she adopted at least one protective behaviour such as increasing physical activity, learning to calculate BMI, or reducing meal portions.

BMI was calculated according to participants' reported height and weight and was evaluated with Z score charts based on BMI recommendations from WHO for men and women aged 15–19 years. Individuals below −2 standard deviations (SD) from standard charts were classified as underweight, individuals ranging from −2SD to +1SD were classified as normal, individuals between +1SS and +2SS were classified as overweight, and individuals above +2SS were classified as obese (18). Other participants were classified as 18.5–24.9 kg/m^2: normal, 25.0–29.9 kg/m^2: overweight, and ≥30.0 kg/m^2: obese (19).

Statistical Analysis

Data were analysed with SPSS (version 15.0) and Minitab (version 15.0) Statistical Software Packs. K-Means and Roc analysis were used to establish a LKAO score cut-off value. Logistic regression analysis was used to analyse the data. The dependent variable was defined as adopting desired post-campaign behavioural changes. Age, sex, level of education, employment, level of income, place of settlement, BMI classification, positive response to the public media spots, and LKAO were established as the independent variables.

In univariate analysis, variables with $p < 0.10$ value were considered potential predictors in the model. Odds ratios with 95% confidence intervals were calculated from the coefficients. Values of $p < 0.05$ were considered statistically significant.

RESULTS

Demography

Of the participants, 84% lived in urban areas and 16% in rural areas; 1,014 (49.8%) were male, and 1,024 (50.2%) female; and the average age was 37.13 ± 14.27 (min–max 15–82). Of these participants, 10.1% were below the age of 20, 24.2% aged 20–29, 25.5% aged 30–39, 18.1% aged 40–49, 14.4% aged 50–59 years, and 7.7% were 60 years old or older. Of the study group, 2.7% (55) were illiterate, and 4.6% (93) were unemployed. Using BMI, as calculated from participant self-report, 4.1% of participants were underweight, 37.3% were normal weight, 34.3% were overweight, and 24.3% were obese or morbidly obese (Table 1).

LKAO Assessment

The LKAO score was 62.18 ± 10.51 (min–max 15–75). The LKAO instrument's sensitivity was 70%, its specificity was 58%, and its cut-off value was 56.5 (ROC under curve-AUC 0.703, $p < 0.001$). Individuals who scored below 56.5 points were evaluated as having insufficient knowledge (23.6%).

FOC Awareness

Of the 2,323 people included in the study, 2,038 (87.7%) people reported hearing about FOC. Among 285 people (12.7%) who did not hear about the campaign, there were no differences in socio-demographic characteristics such as age, sex, place of settlement, occupation, and education ($p < 0.05$).

Within the sample, 85.2% of participants reported receiving information about the FOC through TV ads (public media spots), 28.1% through radio ads (public spots), 11.0% from newspapers, 10.8% from family and/or friends, 6% from billboards, and 8.4% from the internet and other sources (Fig. 1).

Of the participants, 28.5% (580) reported desired behavioural changes. The logistic regression model demonstrated that females and the 20–39 age group reported significant changes in behaviour, while level of education and occupation were not found to be statistically significant. Living in urban areas and being overweight or obese based on BMI significantly increased the prevalence of behavioural change. It was established to be 2.42 times higher in the group that appreciated the public spots

Table 1. *Socio-demographic characteristics of participants*

Variables	Prevalence	
	n	%
Sex		
Male	1,015	49.8
Female	1,023	50.2
Age		
< 20	205	10.1
20–29	493	24.2
30–39	520	25.5
40–49	369	18.1
50–59	294	14.4
≥ 60	157	7.7
Level of education		
Illiterate	55	2.7
Primary	1,134	55.6
Secondary	566	27.8
High school	283	13.9
Employment		
Unemployed	93	4.6
Full-time job	804	39.5
Part-time job	94	4.6
Housewife	642	31.5
Retired	212	10.4
Student	287	14.1
Living area		
Rural	326	16.0
Urban	1,712	84.0
BMI		
Underweight	84	4.1
Normal	760	37.3
Overweight	699	34.3
Obese	495	24.3

and 2.17 times higher in individuals with a sufficient amount of information (Table 2).

DISCUSSION

In the 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Non-communicable Diseases established by WHO, countries were encouraged to fight preventable risk factors for non-communicable diseases (20).

Turkey also followed the global steps defined in the action plan and implemented programmes for reducing tobacco use, unhealthy diet, and physical inactivity (15). The Ministry of Health initiated a new structuring process by "Project of Transformation in Health" and the health promotion activities used in such programmes have been re-arranged. Turkish law requires the Ministry of Health to prepare programmes (public media spots) on health and prevention that are especially cautionary, informative, and instructive and to broadcast them.

Such regulations contributed to Turkey's success in fighting the harmful health effects of tobacco according to the guidelines established by WHO (21). Following current regulations, attention was focused on obesity prevention projects through FOC to create awareness about obesity, its causes and prevention. For the purposes of improving health and conveying accurate information to society, cooperation with the media was established. Within the scope of the campaign, public media spots stressed the message about the importance of physical activity. These media spots included information about BMI, how BMI can be calculated, that a BMI of above 25 means a person is overweight and that healthy diet and eating small portions would help to maintain a healthy weight.

Numerous studies illustrate that campaigns promoted by the media constitute the foundation of many society-based prevention programmes and that such campaigns can reach large audiences (22, 23).

A 1-day TV campaign titled "Heart for Life" in Norway reached 90% of the target population, mass media campaign targeting the reduction of oil purchase in the Netherlands reached 60% of society, and the "Fighting Fat, Fighting Fit" campaign implemented in Britain that included the main message of maintaining a healthy diet and increasing physical activity for obesity prevention was heard by more than the half of the target population (24–26).

The fact that in our study, a vast majority of the participants (87.7%) reported that they had heard of the campaign demonstrates that the campaign's message reached a large section of the population. There were no differences in socio-demographic characteristics between participants who heard the campaign and participants who were unaware of the campaign, indicating that the study was unbiased. However, as evaluating the impact on different strata of the population, results are presented for adjusted models including relevant socio-demographic characteristics (age, sex, living areas).

Television generated a large share of the awareness of the campaign, emphasising its importance as a media channel for health promotion, e.g. campaign messages of the Obesity Prevention Media Campaign targeted at Mexican Americans appeared primarily in TV morning show segments (27).

Public media spots were broadcasted through national channels for approximately 3 minutes per day for 3 months. The fact that

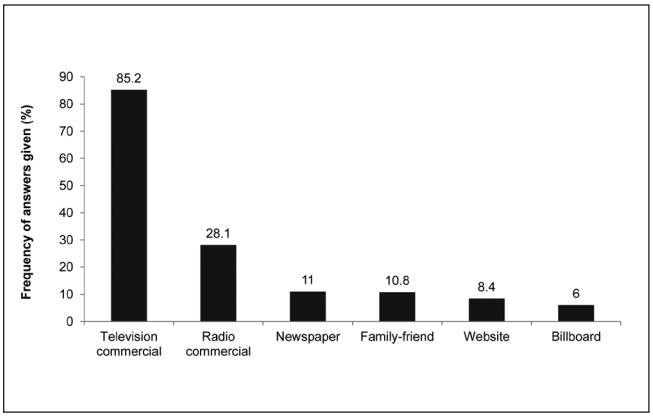

Fig. 1. *Sources from people heard FOC.*

Table 2. *Odds ratio and 95% confidence interval by factors related to the prevalence of behaviour change after FOC*

Variables	Group providing the desired behaviour change		
	Prevalence %	Crude OR (95% CI)	Adjusted OR (95% CI)[a]
Sex			
Male	24.9	1	1
Female	32.1	1.41 (1.16–1.72)*	1.56 (1.17–2.09)*
Age			
< 20	15.4	1	1
20–39	30.8	1.18 (0.84–2.66)	1.28 (1.08–3.12)**
40–59	28.6	1.17 (0.89–1.81)	1.25 (0.97–2.29)
≥ 60	24.2	0.94 (0.58–1.52)	1.15 (0.89–2.08)
Level of education			
Illiterate	20.0	1	1
Primary	29.3	1.65 (0.83–3.24)	1.77 (0.86–3.65)
Secondary	26.5	1.44 (0.74–2.86)	1.71 (0.81–3.63)
High school	30.7	1.88 (0.91–3.62)	2.01 (0.91–3.52)
Employment			
Unemployed	20.4	1	1
Full-time job	28.9	1.27 (0.71–2.28)	1.35 (0.93–2.68)
Part-time job	24.5	1.09 (0.53–2.25)	1.19 (0.63–2.51)
Housewife	33.3	1.38 (0.79–2.42)	1.39 (0.77–2.52)
Retired	26.4	1.31 (0.72–2.61)	1.41 (0.75–2.73)
Student	22.0	0.93 (0.48–1.77)	0.98 (0.61–1.94)
BMI			
Normal	16.9	1	1
Overweight	33.5	2.46 (1.94–3.13)*	2.29 (1.76–2.86)*
Obese	41.0	3.40 (2.64–4.34)*	3.11 (2.34–4.04)*
Living area			
Rural	18.4	1	1
Urban	30.4	1.93 (1.43–2.62)**	1.61(1.17–2.20)**
Status of liking public spots			
No	15.5	1	1
Yes	30.5	2.40 (1.70–3.37)*	2.42 (1.71–3.45)*
LKAO			
Insufficiently	17.0	1	1
Sufficiently	36.7	2.83 (2.18–3.12)*	2.17 (1.73–2.72)*

[a]Age, sex and living areas variables were adjusted.
*p < 0.001; **p < 0.01

86.7% of participants liked the ads and that behavioural change increased in this group is related to the fact that television is found in almost all households and thus plays an important role in conveying messages about health. However, although conveying the desired messages to a large section of society and audiences remembering these messages are primary steps for attaining a healthy lifestyle, they may not be sufficient in establishing behavioural changes (23).

In the "Fighting Fat, Fighting Fit" campaign implemented in Britain, 30% of participants remembered healthy lifestyle messages, but less than 1% consulted authorities to adopt the recommended behavioural changes (26). Similarly, the campaign implemented in the Netherlands did not have sufficient strength to establish behavioural changes in individuals (25).

In our study, 52% of the group remembered the primary message, and 28.5% adopted at least one behaviour such as BMI calculation, downsizing portions, and increasing physical activity in line with the messages promoted. However, one of the limitations of the study is that the results were based on the personal statements of individuals and not on measurable values. Increasing physical activity and downsizing portions as behavioural changes leads to prevention or fighting obesity but calculating her/his BMI may not. However, calculating his/her BMI may raised the subject's awareness of his/her level of obesity.

The fact that about one fourth of participants reported that they established desired behavioural changes suggests that the campaign made an impression nationwide and motivated people to change.

The fact that obese groups exhibited a rate of behaviour change that was 3 times higher compared to other groups demonstrates that the campaign messages successfully reached the target population. In line with previous field study results and the "Health Belief Model", females reported a greater number of behavioural changes than males, including behavioural changes such as increased physical activity and dieting for the purpose of losing weight (26–29). Because of the results of previous studies, high behavioural changes in females were anticipated. Similar results were found in the "Obesity Day" campaign implemented in northern Italy (30).

The literature illustrates that young people can embrace changes in health behaviour more easily than older people. This creates an advantage for intervention studies. In our study, for example, we anticipated an increased number of behavioural changes in the 20–39 age group because of age close to younger population.

Due to higher socio-economic status, technologic advancements and accompanying sedentary lifestyle, obesity has increased precipitously in urban areas (31, 32).

However, amenities used for weight control such as sports fields and professionals such as dieticians are more accessible in urban areas. In these areas, individuals value physical appearance and being fit as a means of gaining acceptance in work, life, and society. People living in urban areas are more exposed to billboards, posters and campaign materials.

The literature suggests that increasing general knowledge and awareness of potential health risks are the primary steps in preventing the spread of diseases such as obesity (33).

Many studies report that improving individuals' knowledge of risk factors leads to success in fighting obesity (14, 34–36).

In our study, the fact that we found behavioural changes two times higher in individuals with a sufficient amount of knowledge about obesity supports this theory. Knowledge about obesity increased the adoption of desired behavioural changes. However, a comparative outcome cannot be presented because we do not have any data on participants' level of knowledge before the campaign; this is the limitation of the study.

A majority of the target population heard about this national campaign by watching FOC TV ads, and many remembered the main messages conveyed about obesity awareness. The fact that there were no differences among participants regarding education

level, employment, income level, or provision of behavioural change suggests that the campaign addressed all strata of society.

However, it is important to note that the campaign had a lower success rate in changing behaviour among males, individuals in advanced age groups, non-obese individuals, individuals living in rural areas, and individuals with insufficient knowledge. These groups may need additional preventive services for obesity.

CONCLUSION

Increasing obesity awareness in groups with fewer behavioural changes and continuing campaigns such as FOC will also increase nationwide success. Data obtained in this study will be used to create a guide for methodology to be adopted in later stages of the campaign and to target the campaign at the specific groups. Public media spots in various formats and other communications that provide evocative messages at certain intervals in the year will continue as the campaign progresses.

The 28% behavioural change that this campaign attained will contribute to reaching the desired society profile in the future.

Conflict of Interests

None declared

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