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Reach of Effective, Nationally-Available, Low-Cost, Nonprofit Weight Loss Program in Medically Underserved Areas (MUAs)

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Abstract

Obesity rates are higher for ethnic minority, low-income, and rural communities. Programs are needed to support these communities with weight management. We determined the reach of a low-cost, nationally-available weight loss program in Health Resources and Services Administration medically underserved areas (MUAs) and described the demographics of the communities with program locations. This is a cross-sectional analysis of Take Off Pounds Sensibly (TOPS) chapter locations. Geographic information systems technology was used to combine information about TOPS chapter locations, the geographic boundaries of MUAs, and socioeconomic data from the Decennial 2010 Census. TOPS is available in 30 % of MUAs. The typical TOPS chapter is in a Census Tract that is predominantly white, urban, with a median annual income between \$25,000 and \$50,000. However, there are TOPS chapters in Census Tracts that can be classified as predominantly black or predominantly Hispanic; predominantly rural; and as low or high income. TOPS provides weight management services in MUAs and across many types of communities. TOPS can help treat obesity in the medically underserved. Future research should determine the differential effectiveness among chapters in different types of communities.

Keywords

Obesity; Underserved; Weight loss

Introduction

Obesity continues to be a major public health issue. The most recent data show that almost 70 % of the adults and almost 32 % of youth in the United States are overweight or obese [1]. Furthermore, obesity disproportionately affects ethnic minority; [1] low income; [2] and

rural populations; [3, 4] which are often considered medically underserved. Medically underserved areas (MUAs) have official designations by the Department of Health and Human Services Health Resources and Services Administration (HRSA).

In most cases, to receive an official MUA designation, an index of medical underservice (IMU) must be met. The IMU uses the following criteria: (1) percentage of population with income below the poverty level, which alludes to the financial resources of the population; (2) primary care providers per 1000 population, which indicates the availability of basic health services; (3) infant mortality rate, which indicates the availability of post-natal care; and (4) percentage of population aged 65 and over, which suggests the extent of medical need in the population [5]. MUAs refer to a defined geographic area [5]. These designations imply that groups in these areas have less access or greater need for healthcare services [6], and may indicate minimal access to weight loss services. Weight loss programs serving MUAs need to operate in low-resource settings that might have three common characteristics: high poverty, a larger older population, and decreased health-care services.

Take Off Pounds Sensibly (TOPS) is a nonprofit, low-cost, nationally-available weight loss program that can provide weight loss services in MUAs that share these traits for several reasons. First, two real-world retrospective cohort analyses have shown that TOPS is effective for those who renew their annual memberships; approximately 50 % of those individuals lose a clinically significant amount of weight at 1 year [7, 8]. Second, TOPS costs about \$90 per year; therefore, it is more affordable for individuals with low incomes than other weight loss programs. Third, TOPS can be implemented in low-resource settings. TOPS is a peer-led program administered through local “chapters” that hold weekly meetings where members are privately weighed and then participate in group educational programming about healthy eating, physical activity, and behavior modification. Only four people are needed to start a TOPS chapter, and they hold chapter offices—leader, secretary, treasurer, and weight recorder. TOPS provides educational and administrative materials, and a local TOPS area captain to train the chapter officers, register the chapter with the national office, and offer resources. Fourth, the average age of TOPS participants was 55.6 years (SD 13.9) [8] and over 35 % were over the age of 65; thus, it is already serving older populations.

The objectives of this paper are to use geographic information systems (GIS) to explore the extent to which TOPS serves MUAs and determine the demographics of the communities that have TOPS chapters.

Methods

Study Design

This is a cross-sectional analysis of all TOPS chapters that were active as of November 2012, where we used the addresses of the chapters to determine: (1) if they were located in MUAs and (2) the demographics of the Census Tracts in which they were located.

Data Sources

TOPS Chapters—The data source for TOPS chapters was obtained from the national database of TOPS Club, Incorporated. The following variables were extracted: chapter

identification number, address of the chapter location where meetings were held, and the date the chapter was started. The data included all active chapters in the United States as of November 2012. The protocol was designated as expedited and approved by the Institutional Review Board.

Decennial Census Data—Decennial 2010 Census data were used to obtain the following demographic variables: median income, racial and ethnic composition, and rural and urban designation for each Census Tract where a TOPS chapter was located. This represents the sociodemographic characteristics of the local community.

Medically Underserved Areas (MUAs)—Federal HRSA designations for MUAs were used to identify locations of TOPS chapters in underserved communities. MUAs are geographic areas that can include one or more of the following components: county; county subdivision—minor civil division; or Census Tract. Therefore, MUAs can be as small as a Census Tract or as large as several counties. MUA geographic boundary data were obtained from the online HRSA Geospatial Data Warehouse (downloaded in May 2013).

GIS Data Processing and Analysis

Using ArcGIS 10.1 (ESRI, Redlands, CA), the TOPS chapter dataset was geocoded by chapter address and then assigned to a Census Tract and an MUA, if applicable, by overlaying the geographic boundaries with data of the HRSA-designated MUAs to determine both the number of TOPS Chapters in MUAs and the number of MUAs that had TOPS chapters. Because there are no specific demographic data about MUAs, we also used the location of the TOPS chapters to acquire a descriptive picture of the socioeconomic demographics of the Census Tracts for each chapter location in the United States, including median income, race/ethnicity, and urban and rural classification.

Income—In 2010, the median annual household income in the United States was \$49,445 [9]. Therefore, we used \$50,000 as the nominal median income for this analysis. To categorize the income of each TOPS chapter location, Census Tracts were classified as high-income if the median annual household income was above \$50,000 and classified as low income if annual median income was below \$50,000. We also divided median annual income into five categories: <\$25,000; \$25,000 to <\$50,000; \$50,000 to <\$75,000; \$75,000 to <\$100,000; and \$100,000 and greater.

Race/Ethnicity—We used definitions of racial/ethnic predominance and integration to define the racial/ethnic composition of a Census Tract defined by prior researchers [10]. For example, a Census Tract that was at least 60 % non-Hispanic white was classified as “predominantly white”; a Census Tract that was at least 60 % non-Hispanic black was classified as “predominantly black”; and a Census Tract at least 60 % Hispanic, regardless of race, was classified as “predominantly Hispanic”. Census Tracts with no predominant racial/ethnic category were classified as “racially integrated”.

Urban Versus Rural—The Census classification of urban versus rural areas mostly reflects population density [11]. An urban area contains 50,000 or more people, and an

urban cluster contains between 2500 and 49,999 people. For this analysis, we used the “urban” category, which combines both urban area and urban cluster. By Census definition, a rural area is one that is not urban. Census Tracts can be classified as partially urban and partially rural. For this analysis, we categorized a Census Tract as “predominantly urban” if 60 % of the population was classified as urban and as “predominantly rural” if 60 % of the population was classified as rural. If there was no predominance, the Census Tract was classified as “mixed urban–rural”.

Results

TOPS Chapter Locations

Figure 1 shows the 6764 TOPS locations throughout the country at the time of this analysis. Table 1 shows the number of chapters in each state. California has the highest number of chapters at 403; and Hawaii has the lowest number of chapters at 3.

Medically Underserved Areas (MUAs)

There were 3454 MUAs designated in the United States. Figure 2 shows MUAs with and without TOPS chapters. Thirty percent of MUAs (N = 1030) have at least one TOPS chapter. Twenty-four percent of TOPS chapters (N = 1622) are in MUAs.

Demographics of Census Tracts with TOPS Chapter Locations

The 6764 TOPS chapters are located in 5889 unique Census Tracts.

Income—Table 2 shows the number of TOPS chapters by annual median income. Median income was available for all but five of these Census Tracts, and there was only one chapter in each of those tracts. The median income in the remaining Census Tracts ranged from \$7053 to \$194,167. Almost 60 % of TOPS chapters are in Census Tracts with annual median income between \$25,000 and \$50,000. Almost 4 % of TOPS chapters are in Census Tracts with annual median income below \$25,000. Less than 2 % of TOPS chapters are in Census Tracts with an annual median income above \$100,000.

Race/Ethnicity—Almost 91 % (N = 6144) of TOPS chapters are located in Census Tracts with predominantly white populations. Less than 2 % (N = 89) of TOPS chapters are located in Census Tracts with predominantly black populations. Almost 8 % (N = 533) of TOPS chapters are located in Census Tracts with racially integrated populations. Only 2 % (N = 134) of TOPS chapters are located in Census Tracts with predominantly Hispanic populations.

Urban/Rural—Over 73 % (N = 4998) of the TOPS chapters were in predominantly urban Census Tracts, over 21 % (N = 1430) were in predominantly rural Census Tracts, and 5 % (N = 336) were in mixed urban–rural Census Tracts.

Conclusions

The TOPS weight loss program is available in 30 % of MUAs in the United States. The typical TOPS chapter is located in a Census Tract that is predominantly white,

predominantly urban, and with a median annual income between \$25,000 and \$50,000. However, TOPS chapters also serve communities that are predominantly black or Hispanic or racially integrated; predominantly rural; and low or high income. Therefore, TOPS is providing weight management services across many different types of communities—white, black, Hispanic, and integrated; urban and rural areas; and low income and high income. This is the first time the reach of a nationally available weight loss program has been described in medically underserved areas and the first time the demographics have been defined.

Understanding the reach of TOPS into MUAs, minority, low income, or rural communities is an important step in addressing the health disparity of obesity because it informs providers and policy makers of its availability for their underserved patients and constituents. The physical availability of commercial weight loss programs, such as Weight Watchers and Jenny Craig, has not been described previously; and they may be offered in MUAs or low income, minority, or rural communities as well. However, Weight Watchers and Jenny Craig can cost \$500 and \$5000 annually, respectively, although the price of Jenny Craig includes the cost of food. Therefore, these programs may be too expensive for individuals who live in communities with low median incomes. Furthermore, rural communities may not have enough people to support a commercial weight loss program. For example, Weight Watchers offers “At Work” meetings; however, the meetings only continue as long as there are 15 paying members. If the number of paying members drops below 15, either due to attrition or if individuals attain “Lifetime” status and are no longer required to pay to participate, the “At Work” group is disbanded (personal communication, Karen Wangaard, Weight Watchers). It is important to note that some weight loss programs offer online or telephone counseling and may not require a physically accessible location for individuals to participate. However, it is unclear if physical presence is an important factor in achieving and maintaining clinically significant weight loss.

This descriptive analysis has several strengths. First, no other weight loss program has published data about its reach into MUAs. Second, it uses GIS to map TOPS chapter locations across the United States and determine the relationship between chapter locations and MUAs, as well as describes the race/ethnicity, median income, and urban versus rural environment for the Census Tracts for all of its locations in the United States. Third, by showing the extent of the reach of TOPS among different race/ethnicities, income levels, and urban versus rural communities, it demonstrates that the program is used in many types of communities and is, presumably, acceptable to them.

This analysis has two limitations. First, it only examines demographics at the level of the Census Tract and does not identify the racial/ethnic, income, and urban versus rural environments of individual participants in each chapter. However, Census Tracts give a reasonable estimate of the predominance of race/ethnicity, median income, urban versus rural locations in the community being served. Second, the size of MUAs can vary from a Census Tract to multiple counties. Therefore, the location of a TOPS chapter in an MUA may not indicate that the entire MUA has physical access to the chapter. However, the infrastructure of the program allows any four individuals to start a TOPS chapter in any location.

The current study can be used to target communities that might benefit from TOPS—those with lower incomes and high prevalence of obesity. There are also several opportunities for future research. It can examine the demographics at the individual level rather than the community level to provide further details about the types of individuals who utilize TOPS. Future studies can also determine the differential effectiveness among chapters in different types of communities, such as documenting whether weight loss or weight loss maintenance differs between types of communities. For example, if variable effectiveness is documented, this may suggest that the program may need to be adapted.

Given its effectiveness, locations in communities at risk for obesity, and ease of implementation, TOPS is poised to be part of the broader solution to treat obesity in medically underserved areas and among those most in need of weight management programs.

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Fig. 1.
Locations of TOPS chapters throughout the United States

Fig. 2.
MUAs with and without TOPS chapters

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Table 1

Number of TOPS locations by state

State	Number of chapter locations
Alabama	73
Alaska	25
Arizona	126
Arkansas	95
California	403
Colorado	102
Connecticut	56
Delaware	11
Florida	236
Georgia	97
Hawaii	3
Idaho	55
Illinois	403
Indiana	185
Iowa	174
Kansas	171
Kentucky	96
Louisiana	66
Maine	105
Maryland	71
Massachusetts	92
Michigan	360
Minnesota	321
Mississippi	41
Missouri	228
Montana	66
Nebraska	97
Nevada	34

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State	Number of chapter locations
New Hampshire	33
New Jersey	30
New Mexico	39
New York	291
North Carolina	153
North Dakota	68
Ohio	328
Oklahoma	84
Oregon	201
Pennsylvania	349
Rhode Island	11
South Carolina	49
South Dakota	57
Tennessee	81
Texas	274
Utah	41
Vermont	41
Virginia	137
Washington	266
West Virginia	122
Wisconsin	286
Wyoming	31

Table 2

Annual median income of Census Tracts with TOPS chapters

Annual median income	Number of TOPS chapters (%)	Income category
Less than \$25,000	251 (3.7)	Low income
\$25,000 to <\$50,000	3995 (59.1)	Low income
\$50,000 to <\$75,000	1984 (29.3)	High income
\$75,000 to <\$100,000	417 (6.2)	High income
Greater than \$100,000	112 (1.7)	High income

Median income not available in five Census Tracts