

The State of Obesity in Kansas: A Community Based Approach to Chronic Care Management

Morgan P. Bretches¹,

Tiffany E. Schwasinger-Schmidt, M.D., Ph.D.²

¹Wichita State University, Wichita, KS

²University of Kansas School of Medicine-Wichita, Wichita, KS

Department of Internal Medicine

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INTRODUCTION

Based on the current prevalence of obesity and projected growth rates, approximately 50% of all adults ages 18 and older in the United States will be obese within the next 10 years.¹ The state of Kansas is projected to have greater obesity rates than the national average during this timeframe at 55.6% of the population. Current estimates rank Kansas 12th in the nation for obesity prevalence, with 34.4% of adults ages 18 and older who are obese, and 39th in the nation for childhood obesity with 12.5% of the population ages 0 - 17 with obesity.²⁻⁴ The increasing prevalence of obesity is associated with a variety of factors including: socioeconomic status, ethnic and racial disparities, genetics, geographic location, age, disability status, pregnancy, associated comorbid medical conditions, access to food, cultural beliefs, and health behaviors.⁵⁻²⁰

Socioeconomic factors including income level, education, ethnicity, race, unemployment, and geographic location have a significant influence on the development of obesity (Figure 1).^{1,5-10} Obesity prevalence is correlated negatively with income level, with increased rates of obesity noted in low income populations. Individuals with limited financial means often live in food deserts and gravitate toward convenient food sources that are highly processed, low in nutrient density, and high in caloric content with a long shelf life. Within the city of Wichita, there are 44 square miles of food deserts where individuals live more than 1 mile from a grocery store.¹² With limited access to food, individuals within these neighborhoods increasingly utilize convenience stores that are located within walking distance. A study conducted by the Health and Wellness Coalition of Wichita in 2013 showed that convenience stores make up 40% of the retailers within Wichita, but only 44% offer fresh fruits and 9% offer fresh vegetables.¹² The cost associated with fresh produce at these locations can be up to four times the cost of fresh produce purchased from grocery stores.

Individuals without a college degree are more likely to be obese due to limited education regarding food selection and healthy lifestyle habits.^{5,8} Within the post-secondary education systems, students often receive information related to healthy behaviors including daily exercise recommendations, nutrition education, and the negative effects of obesity on overall health and wellness. With limited access to education regarding nutrition, individuals tend to select cheaper food that is promoted as being “nutritious” like fruit juices and canned fruits and

vegetables, rather than fresh produce.

Geographic location has been correlated with obesity.⁷⁻¹⁰ Within urban communities, there is increased access to exercise facilities and recreational activities and spaces, which can be restricted in resource limited rural areas. Additionally, access to fast food tends to be more prevalent within urban communities leading to increased consumption of food with high caloric density and limited nutrients. Obesity rates within the state vary by region, with the southeast portion of the state having obesity rates as high as 40.4% of the population, which is in direct contrast to the Kansas City metropolitan area at 31.7%.^{9,10}

Furthermore, similar disparities exist within ethnic and racial groups in Kansas with both Hispanic and African-American populations having a higher prevalence of obesity than non-Hispanic White populations.⁴ This disparity in obesity rates have been linked to cultural differences surrounding food. Additional individualized patient demographics further contribute to the development and increased prevalence of obesity.^{11,13} As an individual ages, their risk of obesity increases due to changes in metabolism that promote fat deposition, food insecurity, and changes in activity levels that result in fewer calories burned compared to intake of nutrients.¹¹ Two-thirds of obesity begins after adolescence, and in Kansas, the prevalence increases from 21.8% (ages 18 - 25) to 36.3% (ages 26 - 44) to 40.1% (ages 45 - 64).⁴ Moreover, gender has a role in the risk of obesity development with women in Kansas having a higher prevalence of obesity compared to men.

Prevalence of Obesity-Related Socioeconomic Factors in Kansas

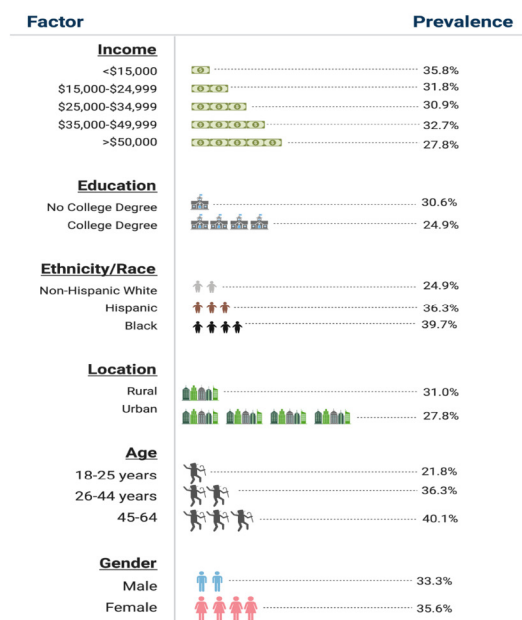


Figure 1. The impact of socioeconomic factors on the development of obesity rates within the state of Kansas. Rates reflect self-reported survey data and likely underestimate the true prevalence and the effect of demographics on the development of this disease. [Figure created with BioRender.com.]

Despite the increasing prevalence of obesity within the state of Kansas, accurate data are limited due to the majority of data consisting of self-reports of height and weight through the Behavioral Risk Factor Surveillance System (BRFSS).¹ Adjustments for self-reporting bias in body mass index (BMI) specifically have been conducted through adjustments in BMI distributions (BMI quartile, gender, and time period to control for time trends and the variation within demographic subgroups), thus allowing for comparison for the BRFSS data with the National Health and Nutrition Examination Survey (NHANES) data. NHANES data reported substantially higher obesity prevalence rates than BRFSS due to the fact that BRFSS uses self-reported data. For example, the national prevalence for adult obesity is 42.4%, per NHANES, and the national average reported from BRFSS is 30.82%.² Given the discrepancy of prevalence rates and methods of collection between NHANES and BRFSS, it can be assumed that NHANES has more accurate data, although BRFSS had a larger data set allowing for BRFSS and NHANES to be adjusted to each other.¹ Following adjustment of the data to minimize self-reported bias, it was evident that the prevalence of this disease is higher than originally predicted and is continuing to grow at an alarming rate.

Obesity has an effect on all organ systems in the body and can result in the development of numerous co-morbid medical conditions (Figure 2).^{2,8,14-20} Within Kansas, the incidence of obesity is increased in patients diagnosed with depression compared to patients without depression. This finding can be attributed to alterations in personal body image, social stigma, and variations in neurochemistry and biological responses to stress.^{8,21-23} Diabetes rates in Kansas are elevated significantly in patients with obesity compared to those without obesity. In 2010, there were 239,691 reported cases of diabetes mellitus, and by using these data, it can be projected that 367,777 total cases of diabetes mellitus will occur within the state by 2030, which is an increase of approximately 50%.^{4,8} Hypertension and coronary artery disease followed a similar trend with 44.3% of obese patients experiencing high blood pressure and 38.7% with a diagnosis of coronary artery disease.⁸ Without intervention, the number of new cases of heart disease will reach 769,578 cases by 2030 resulting in significant morbidity and mortality with increased healthcare resource utilization within the state.⁴

Prevalence of Obesity Comorbid Correlates in Kansas

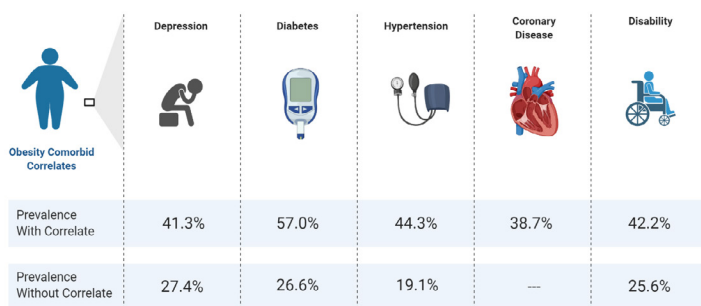


Figure 2. Prevalence of obesity related comorbid conditions in Kansas. Prevalence is based on self-reported data from BRFSS. Accurate data for prevalence of coronary disease without obesity in Kansas was unable to be obtained due to the high correlation between obesity and coronary disease. [Figure created with BioRender.com.]

Disability status due to medical conditions was also a large predictor of obesity.^{8,10} Kansas followed this national trend with 42.2% of individuals on disability being obese, compared to 25.6% without a disability. Furthermore, arthritis also has an increased prevalence in obese patients with 39.8% experiencing joint inflammation.⁸ Reasons for disabilities could include limitations due to multiple chronic medical conditions or limitations in activities of daily living secondary to excess weight gain.

Dietary intake and access to food can be a contributing factor to the development of obesity.²⁴⁻²⁶ Promotion of healthy behaviors of Kansans are limited, with a significant portion of individuals in the state not meeting the recommended daily activity levels, at 45.3%.⁸ Furthermore, 37.5% of all Kansans do not eat at least one serving of fruits or vegetables each day.²⁷ Access to healthy foods can be challenging both within urban and rural communities.²⁸⁻²⁹ Within urban communities, food deserts are prevalent. Community-based efforts to address food insecurity including farmer's markets and community gardens placed within food deserts promote healthy eating and access to nutritious food that is beneficial on a population-based level. Increasing access to food can serve as an economic stimulus in that money spent within the community benefits the overall community.

Primary care providers are positioned to address the obesity epidemic, due to the widespread prevalence of the disease and the trusting therapeutic relationship that often is established between physicians and their patients. However, most physicians do not have adequate training in nutrition counseling and lack resources to support the implementation of a comprehensive obesity care program that incorporates evidence-based guidance on dietary modification, mechanisms for behavioral changes, and guidelines for physical activity.³⁰⁻³² Additionally, there are numerous barriers in providing obesity counseling to patients, including stigma associated with the disease, implicit provider bias, cost of services, personnel to deliver an effective behavioral modification program, limited payor coverage, lack of consistency of care, time constraints, demand for increased physician relative value units for performance, and a paucity of clear guidelines to document an encounter for reimbursement.^{21,22,33,34}

A recent study investigating medical licensing examinations found that concepts deemed important for obesity prevention and treatment were not featured on certification exams for primary care providers.³⁵ Results from the study showed that 289 (38%) of the 802 multiple-choice questions from all three licensing exams were relevant to obesity, with a large focus on diagnosing and treating comorbid conditions versus the disease itself. Due to the substantial increase in obesity rates within recent years, it is crucial for the medical licensing examinations and medical education curricula to assess medical student and physician knowledge of obesity prevention and treatment options adequately and effectively.

Implicit bias within healthcare has been identified to be as prevalent in the general population and has been shown to affect diagnosis and treatment of disease.³³ Combating implicit bias within healthcare requires individual recognition, which can be obtained from taking implicit bias tests. Medical curricula across the country have started to implement implicit bias training in which students become more aware of their own biases and develop tools to inhibit bias in healthcare.

The cost of services associated with obesity care has continued to increase with an estimated \$3,508 per obese patient in 2010.³⁴ The economic impact of obesity consists of both direct and indirect costs including obesity-related prevention initiatives, diagnostic testing, treatment for obesity and related co-morbid conditions, and reductions in productivity and days of lost work due to medical treatment and disability.³⁶ Current estimated healthcare costs associated with obesity are 209 billion dollars per year, a figure that represents 20% of all healthcare spending in the United States.³⁷ Lost productivity due to obesity-related conditions are estimated to cost \$3.38 - 6.38 billion annually.³⁶

Obesity Impact on Health

Obesity has significant systemic effects on the overall health of the population and was associated with a 20% increase in morbidity and mortality.^{38,39} Estimates of all-cause mortality associated with obesity were around 18%, with women having higher mortality rates than men.⁴⁰ Obesity has a disproportionate effect on the cardiovascular system through the development of atherosclerosis, coronary artery disease, cerebrovascular accidents, hypertension, dilated cardiomyopathy, and renal disease development and progression via blood pressure dysregulation.⁴¹⁻⁴⁵

The development of insulin resistance and resultant type II diabetes mellitus is another leading cause of morbidity and mortality secondary to obesity.⁴⁶ Within Kansas, the prevalence of diabetes is approximately 12%, and is the 7th leading cause of death.^{44,48} Additional complications associated with diabetes include the development of diabetic neuropathy, diabetic retinopathy, the development and progression of renal disease, and increased lower extremity amputations.⁴⁸ Complications from diabetes has become the leading cause of kidney failure in the United States and at least 229,000 people are on dialysis or have a kidney transplant due to diabetes. Diabetes is the leading cause of blindness in the United States, and contributed to 10,000 new cases of blindness each year. Lastly, diabetes is the underlying cause for approximately 60% of non-traumatic lower extremity amputations.

A strong association exists between obesity and underlying systemic inflammation that has been linked to an increased risk of the development of various cancers, which are the second leading cause of death in the United States and Kansas.^{42,43,48,49} Obesity-related malignancies include breast cancer (in postmenopausal women), colorectal cancer, renal cell carcinoma, endometrial cancer, thyroid cancer, pancreatic cancer, multiple myeloma, hepatic malignancies including hepatocellular carcinoma, ovarian cancer, and esophageal adenocarcinoma.⁵⁰

Within the United States, approximately 40% of all cancer diagnoses were made in overweight or obese individuals. Following the gender discrepancy of obesity, cancers related to obesity also had higher prevalence among females, at 55%.

Obesity negatively impacts quality of life through development of osteoarthritis resulting in an 4.2% reduction in productivity.⁵¹ Additionally, progression of the disease adds burden to the healthcare system through increased joint replacement surgeries and limited mobility.⁵¹⁻⁵³ Specifically, within Kansas, the total number of arthritis cases in 2010 was 555,211 individuals with 38% of Kansans with arthritis who were obese.⁴

Challenges in the Treatment of Obesity

Provider-Level Challenges. Due to the increased prevalence of obesity in the United States and Kansas, the majority of obesity treatment occurs in primary care offices across the country.¹⁻⁴ Significant challenges that physicians face in the treatment of obesity include a paucity of nutrition education among healthcare professionals, reduced access to registered dietitians, challenges in interprofessional care collaboration, medication-induced weight gain, patient disability status, local community health policies, and access to evidence-based methods in addressing behavioral change.^{14,16-18,32,35,54-62}

One of the most significant challenges in the treatment of obesity is the paucity of nutrition education among healthcare professionals.^{35,54} Medical students and physicians who were surveyed at a Midwestern medical school felt unprepared to offer nutrition counseling to patients, and reported little-to-no observed nutrition counseling during clinical experiences.⁵⁴ Additionally, nurses are well positioned to provide nutrition education to patients due to their unique intermediary interactions between both the patients and the physician.⁵⁸ However, despite this relationship, nurses often feel unprepared to counsel patients on nutrition. All healthcare professionals could address this barrier through enhanced nutrition-based continuing education regarding simple food label interpretation (i.e., if you cannot understand the first five ingredients on the label, you should not eat it), eating closer to nature with more fruits and vegetables, shopping on the periphery of the grocery store (limiting consumption of highly processed foods located in the middle of the store), and/or limiting portion sizes by eating off the salad plate instead of the dinner plate, which has doubled in size over the past 15 years. All of the previously mentioned opportunities are simple and cost-effective methods to address the barriers in nutrition education.

Furthermore, providers can review or provide educational resources that are available online. The Obesity Society provides key recommendations focusing on the multi-facets of obesity such as pregnancy, adequate weight management tips for children and adults, and medication-induced obesity.⁶²⁻⁶³ Additionally, the American Heart Association (AHA) has information for both the patient-level and the provider-level regarding several topics including diet, exercise, and weight management tips with a large focus and key recommendations of how obesity affects cardiovascular disease.⁶⁴ The U.S. Centers for Disease Control and Prevention has current literature on obesity prevalence, guidelines for treatment, as infographics that provide patients with visual references regarding the effects of obesity.⁶⁵

Interprofessional collaborations between registered dietitians and physicians would aid in the quality of care that patients receive and improve health outcomes.⁵⁶ Similar to the growing physician shortages, registered dietitians are facing shortages both in the United States and in Kansas, with 89,300 total registered dietitians in the United States and 943 providers located in Kansas.⁵⁹ Limited access to these professionals is noted especially in rural communities across the state. Given the benefit of dietitians to the multidisciplinary healthcare team, it is crucial to incorporate these professionals remotely via telemedicine or through grant-based funding to bring increased resources to rural communities.

Medications used in the treatment of chronic medical conditions can result in increased weight gain.¹⁷⁻¹⁸ For example, insulin use in patients with type II diabetes mellitus can result in weight gain, which further increases cardiovascular morbidity and mortality in an already high risk population.¹⁷ Additionally, antipsychotics used for the treatment of mental health conditions promote weight gain.¹⁸ An average weight gain of 3.22 kilograms was found in patients who use antipsychotics short-term, and 5.30 kilograms on average in patients with long-term use of the medications. Due to this risk of side effects associated with medication use, healthcare professionals should monitor the patient's weight throughout the course of treatment and adjust treatment as indicated if the patient has significant weight gain on the medications.

Additionally, behavioral change is a crucial component to addressing the obesity epidemic.⁶⁰⁻⁶² Physicians should recommend and assist with behavioral therapies to include: setting initial goals, self-monitoring, controlling or modifying the stimuli that activates eating, eating style, behavioral contracting and reinforcement, nutrition education and meal planning, increasing physical activity, social support, cognitive restructuring, and problem solving. These elements consist of a comprehensive lifestyle change that can aid patients to succeed in addressing weight loss. Examples of how physicians can aid in the critical elements of behavioral therapy are assisting with a realistic and healthy weight loss schedules, encouraging food diaries, providing healthy stimulus suggestions, suggesting to slow patients' eating styles, promoting regular weight checks and documentation of weight changes, suggesting behavioral rewards that are not linked to food, providing nutritional education or referral to a registered dietitian, promoting physical activity prescriptions, and referring to support groups to maintain a social support system. The efficacy of behavioral therapy has proven benefits when there is a comprehensive plan established.

Patient-Level Challenges. In a recent study, approximately 62% of food within the United States was found to be hyper-palatable and contains a high percentage of fats, sugars, carbohydrates, and sodium.²⁶ These hyper-palatable foods have been linked to reward circuits in the brain, so that when these foods are consumed, individuals receive an infusion of dopamine resulting in a reward based stimulus. Additionally, foods that are labeled as lower in fat and/or calorie content often have other measures of hyper-palatability further contributing to this epidemic. Food labels often are deceiving and the general population has difficulty interpreting both the front-of-the-package and back-of-the-package labeling.⁶⁶ Food labels largely are regulated by the U.S. Food and Drug Administration (FDA).⁶⁷ The FDA assures that labeling of foods provides consumers with statement of identity, the product's net

weight, manufacturer's address, nutrition facts, and ingredients lists. Additionally, the labels must follow certain rules to include serving size, macronutrients, and vitamins and minerals. However, for the average person, these labels are confusing and require basic knowledge of nutritional needs and correct interpretation of the serving size, which often proves to be challenging for many people, as demonstrated by Figure 3.



Figure 3. Examples of current food labels and how the information is presented. (A) Per serving-based label. (B) Per serving and per container-based label. Obtained from: <https://www.nia.nih.gov/health/reading-food-labels>.

Simple labeling, such as a “stop light” color-coded system, has shown merit by identifying the high, medium, and low nutrient content in food.⁶⁵ Mislabeling results in “hidden calories” that increase the intake of nutrient poor foods leading to increased fat deposition in the body. The relabeling of food to include simple and easy to understand methods, such as the “stop light” coded system, would create a simple, effective method to promote healthy eating (Figure 4).

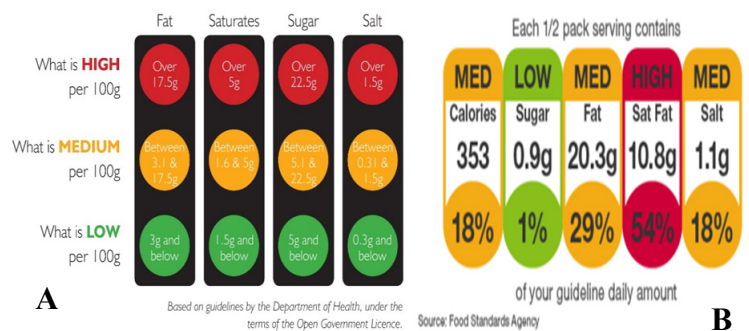


Figure 4. (A) Examples of food labels coded with the stop light system (<https://www.chss.org.uk/supportus/hps/foodlabels/>). (B) A sample food label with the stop light labeling (<https://www.foodnavigator.com/Article/2014/04/28/From-traffic-light-to-colour-coded-labelling>).

Stop light food labels have been proven to be effective in a recent study.⁶⁸ The study reported that when a hospital cafeteria adopted the stop light labeling method, hospital employees consumed reduced calories and more nutritious foods, which was sustained for two years after first adopting the method. Moreover, stop light food labels are becoming more popular, given the benefits and readability. However, despite the benefits, adopting this method of food labeling requires additional research on effectiveness in large populations and federal funding to ensure compliance.

Additional barriers to the treatment of obesity include societal norms and individual health behaviors, such as the social acceptance of obesity, known as the “obesogenic culture”.⁶⁹⁻⁷¹ Individuals who were overweight or obese rated their weight as “about right”, suggesting a normalization of obesity among the population.⁶⁹ The normalization of overweight and obese individuals can pose severe health consequences at the population level due to the increased risk for co-morbid disease development. Cultural beliefs and historical events also impacted obesity development.¹⁹ When the history of our nation is examined, increased weight was viewed as a sign of wealth indicating increased access to food. In some cultures, increased weight was perceived historically as a desirable trait, especially in women, as it was viewed as a marker of increased fertility and baseline reserves. However, in contrast, current cultural beliefs have shifted to the opposite end of the spectrum, favoring thin individuals across all age groups examined.⁷⁰ Additionally, overweight individuals were rated more negatively than their thin counterparts, creating harmful long-term consequences.

The current societal views regarding weight gain and obesity center on negative social stigmas that can harm an individual’s confidence and hinder motivation for behavioral change.⁷¹ Moreover, the negative stigmatization associated with obesity in recent years has contributed to negative health outcomes through increased mental illness, which creates a confounding burden. Overcoming these challenges can be achieved by providers promoting a positive, reassuring, and supportive role to patients with frequent check-ins and enhanced patient activation in their own care. Ways to overcome cultural barriers and societal stigmas include gaining a deeper understanding of the patient’s culture and finding ways to highlight health promotion with regards to cultural beliefs that align health promotion within the community. This can be achieved through the use of community health workers, which are individuals within the target community who can partner with providers to promote health through the use of cultural norms and beliefs.⁵⁷ These individuals can aid in care coordination, social support, resource linking, health assessments, coaching, and medication adherence promotion. Community health workers enhance access to care which improves patient outcomes and the overall health within the community.

The health behaviors in the United States have been changing steadily with the increasing use of technology, and the negative effects of “screen-time” on obesity development is a significant contributor to the growing epidemic.^{72,73} In an age of technology, combatting the effects of “screen-time” can be overcome by simple measures including walking while responding to emails or text messages (as long as the participant is aware of their surroundings and is not completing this task in a high risk situation, including walking across a street), the use of standing or exercise desks, Nintendo Switch™ and Wii™ games that incorporate movement with entertainment for short periods of time, and streaming workout videos on the numerous online platforms.

Lastly, a significant challenge in the treatment of obesity focuses on the barriers within the community regarding access to food and safe

spaces to exercise.⁴⁸ Both local and national health policies affect the prevalence of obesity within a community and can create a challenge for patients and providers.^{48,55} For example, within Kansas, surveyed legislators ranked obesity as the second highest priority for the state, only after increasing employment rates; yet few initiatives have been passed on a state level to promote health and reduce the prevalence of obesity.⁵⁶ Individual counties have made significant advancements in chronic care management despite the paucity of state-wide initiatives. After Sedgwick County completed the local food assessment in 2015, it found that if policies supported farmers to provide 5% of fruits and vegetables to grocery stores in Sedgwick County, it would lead to an overall local economic benefit of \$54.6 million.⁴⁸ These data stimulated the formation of a local Food Policy Committee to focus on enhancing the food supply, by creating neighborhood gardens and promoting local farmer markets. Furthermore, local churches and community organizations can promote health and wellness by advocating exercise and nutritional foods, contributing to overall population health within the local community.

Urban and Rural Community Resources

There are a variety of available resources for both urban and rural communities including social media platforms, mobile applications, smart watches, active commuting, community exercise centers, breastfeeding initiatives, and farmers markets; all of which can help to fight the obesity epidemic throughout Kansas communities.⁶⁷⁴⁻⁷⁹ Social media platforms, mobile applications, and smart watches each have possibilities in aiding in weight loss and healthy eating. Specifically, social media platforms are a way to follow healthy eating recipes and allow providers to connect patients with health-based information that aligns with their own values. Examples of healthy lifestyle influencers are Fit Men Cook, Kayla Itsines, Massy Arias, and Dwayne “The Rock” Johnson. However, patients should be advised of the pros and cons that exist with social media platforms.⁷⁴ While social media can create inspiration, it also can create unrealistic expectations, which psychologically could be damaging to patients. Additionally, social media can propagate false information so only reputable sources should be encouraged through patient education of healthy behaviors and the use of reliable resources.

Mobile applications and smart watches additionally promote weight loss and healthy eating in an environment that is accessed easily by all patients in all settings. There are a variety of mobile applications designed to track daily food intake and caloric content, as well as recording physical activity levels and calories burned.⁷⁷ Examples include Ideal Weight, MyFitnessPal, Noom, and Nike Run Club. Ideal Weight tracks participant’s daily weight and BMI by their “Weight Wheel,” which provides graphs to help the participant understand how their recent dietary choices affects their weight. MyFitnessPal relies on an established food database and pairs it with a barcode scanner to track the participant’s nutrient intake, calorie content, and offers insights to how one can make healthier choices. Noom is unique in that it relies on psychology to create a custom approach to develop healthier habits. Noom also tracks the participant’s weight, blood pressure, blood sugar, exercise, and food intake. Lastly, the Nike Run Club application provides encouragement throughout the participant’s walk or run by connecting to Facebook and as friends “like” the post, a cheer comes through the participants’ headphones. Mobile applications offer the ease and convenience needed for

individuals with busy lives, and many of the nutrition trackers simplify the ability to monitor energy intake and expenditures.

Smart watches allow an opportunity to interface across devices and provide reminders for physical activity and water consumption, aiding in healthy behaviors and patient activation with health outcomes. Other technology-based obesity-reduction strategies include smart scales, which can connect to all the patient's devices and track/graph the patient's weight loss progress.

Technology-based initiatives, when combined with healthcare system approaches, can have a significant positive impact on weight-reduction and healthy behavior modifications.^{75,76,78} Individuals with technology-based initiatives in addition to the aid of healthcare services, noted at least a five percent reduction in weight in six months.⁷⁵ Additionally, a meta-analysis noted at least one kilogram of weight loss among those using mobile applications compared to others without mobile technology initiatives.⁷⁶ Another benefit to mobile applications is both patients and providers report being satisfied with the application for weight loss.⁷⁸ Furthermore, the effectiveness of the mobile applications has been noted in obesity. The mobile applications showed weight reduction and sustained weight loss when obese patients added them to their treatment plan in primary and secondary care.⁷⁹ With the numbers increasing as users embrace their platforms, mobile applications prove to be a valuable tool that providers can encourage patients to use to promote overall health and improved clinical outcomes.

Another resource for physicians in urban and rural communities is the promotion of active commuting and local community exercise and recreation centers. Active commuting, which could be biking or walking to work and shopping, is an easy way to promote health. In fact, communities with active commuting noted an overall reduction of 0.51 kg/m² to BMI over time within the community at large.⁶ Recreation centers, like the Greater Wichita YMCA, have a variety of classes that focus on nutrition counseling, cooking, and personal and group fitness.⁷⁹ Other community organizations can promote walking and running by local distance walks/runs, which often support local charities.⁴⁸

Breastfeeding promotion has the ability to relieve childhood obesity by offering a safeguarding factor against disease development.⁸⁰ Breastfeeding can influence immunological, developmental, neural, endocrine, and psychological systems of a child that are believed to contribute to a reduced incidence of childhood obesity. Within Kansas, the rates for breastfeeding decrease from 3 months of age to 6 months of age by 58.2% to 38.5%, respectively.⁸¹ These data suggested that continued education by providers and support for nursing mothers in the workplace can promote long-term breastfeeding and the public health benefits associated with it. Physicians and providers can encourage breastfeeding and provide/promote maternal classes in the community. Additionally, physicians can advocate for more access to private areas to pump and for daycares at the mother's workplaces to promote maternal breastfeeding, which can lead to improved clinical outcomes for both the mother and child.

One of the most important aspects of chronic disease management and prevention is community outreach and education. Healthcare providers have a unique role in that they provide both engagement and education on chronic care management and preventive care. Raising awareness about obesity and the health outcomes associated with the

epidemic can occur across diverse settings. Engagement and education can take place at health clinics, hospitals, medical schools, the health department, and community organizations. Physicians working interprofessionally with health champions in the community can promote culturally appropriate and individualized care plans that result in enhanced engagement, education, and health outcomes on a population level. Additionally, healthcare providers can get involved with local schools to reinforce healthy behaviors early to empower families at home and prevent future generations of obese patients. Engagement and education by healthcare providers also should include advocacy within local, state, and federal governments in a continued effort to create policies to enforce positive health outcomes.

CONCLUSIONS

Given the increasing prevalence of obesity, a heightened awareness of this epidemic is needed from healthcare providers. The negative systemic effects of obesity on the population, both nationally and locally, continue to impact the overall health of Americans significantly. Providers can address and engage obese populations in diverse ways to align with the individual's beliefs, culture, and personal goals. Utilization of local and national resources can provide a team-based interprofessional approach, which is an essential component of chronic disease management. By eliminating barriers to better health outcomes and working together as a team, healthcare providers across Kansas can contribute positively to the overall health of individuals within our state.

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