

## From Food Deserts to Food Swamps: Health Education Strategies to Improve Food Environments in Urban Areas

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Improving access to nutritious foods is critically important in the fight against obesity [1]. The “food desert” metaphor has been used to characterize geographic areas associated with low socioeconomic status and inadequate access to healthy food choices. The United States Department of Agriculture (USDA) has defined food deserts as census tracts with a poverty rate of 20% or greater, a median family income at or below 80% of the median income for the surrounding area, and at least 33% of the residents living over a mile away from a supermarket or grocery store [2].

Negative health outcomes such as increased obesity and diabetes risk have been associated with poor dietary intake and negative food environments [3-5]. However, the argument that merely increasing grocery store outlets will improve health outcomes is likely oversimplified. While the approach of “if you build it [grocery outlets], they will come” has been a beneficial strategy for rural areas experiencing food access concerns, findings related to the effects of introducing grocery stores to urban areas have been equivocal [6,7]. Therefore, health educators need to adopt a more comprehensive approach for improving food environments.

Although rural food deserts have been largely desolate areas void of fresh fruits and vegetables, urban foodscapes are inundated with energy-dense food options from fast food establishments and corner stores [8]. This high availability of fast food coupled with a disproportionately lower number of grocery stores in these same areas have led to the proliferation of these poor food landscapes [9] which should be renamed “food swamps” [7,8].

### Beyond Food Access

Health educators should continue to expand interventions used to address nutritional access within urban “food swamps.” While popular strategies have introduced more grocery stores within urban foodscapes to encourage the access and consumption of fruits and vegetables, results are mixed with some studies suggesting that there is little influence on dietary behaviors when a grocery store is nearby [6,7,10]. While access to a grocery store can lead to positive changes related to dietary behaviors, the density of fast food and convenience store locations may negate these effects by simultaneously promoting consumption of unhealthy foods [11,12]. Interestingly, Larson and colleagues found that there were 50% fewer convenience stores located in more affluent neighborhoods which offers a lower density of fast food outlets [11].

Alternative approaches for improving food access should utilize existing infrastructures in low-income neighborhoods. Several studies [10,13] have found that corner stores often neglect to offer fruits, vegetables and other healthful options. The amount of designated shelf-space in corner stores for calorically-dense snack foods is associated with higher BMI scores and the higher prevalence of these establishments within food swamps [10,14]. However, pilot interventions exploring the impact of stocking healthful foods within these locations have shown promise for increasing dietary consumption of fruits and vegetables [15,16]. Additionally, in areas with low access to transportation, utilizing numerous corner stores to stock healthy foods rather than one

or two large grocery stores (that will be farther away) could be more effective. These findings suggest that partnering with existing locales to offer healthier options could make a stronger impact on health outcomes and behaviors rather than solely focusing on introducing grocery stores alone.

Moreover, while fruits and vegetables are available on a limited basis within food swamps (typically within corner stores) they tend to be more expensive and of poorer quality than in more affluent areas [10,17]. Unfortunately, cost can serve as a major barrier for purchasing healthier foods which may mistakenly suggest to retailers that stocking higher quality produce is unnecessary and economically unprofitable. However, Weatherspoon et al. [18] have asserted that when higher quality and affordable produce is appealing to all consumers. Given that price appears to be a major barrier, education and support should be provided to food retailers. This strategy could translate into healthier consumption for residents of food swamps.

Finally, there are some innovative initiatives that should be replicated to better understand their effectiveness with improving food environments. A few noteworthy interventions include urban community gardens, mobile farmers markets and lawn to garden programs [19-22]. However, while preliminary research on these initiatives has shown promise, challenges remain including community buy-in, political support, lack of sustained funding, zoning restrictions, and seasonality of the programs. These barriers must be overcome in order to increase successful outcomes and sustainability of these initiatives. Furthermore, it is possible that these interventions, coupled with providing nutrition and health education (to both community members and political leaders), can be a powerful way to improve skills, increase healthful food access, and empower citizens.

While there is no magic bullet for eliminating food swamps, health educators should employ a variety of comprehensive strategies to better address food swamps in urban areas. While grocery store access is a step in the right direction, strong consideration should be given to include additional interventions, including increasing healthy food options in corner stores, helping to contain costs and improve quality of healthy food items at corner stores, collaborating with community residents and political leaders to support innovative programs (i.e. community gardens, mobile farmers markets, lawn to garden programs) and continuing to provide nutrition education to residents.

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