Snackwise®

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The Science Behind Snackwise®

The direct correlation of overweight among American children and adolescents and increased risk for other health complications is well documented[123]. Among contributing factors is a high level of consumption of snack foods and beverages. Currently, energy dense-nutrient poor foods, such as snack type foods and beverages comprise nearly one-third of children's daily calories, two-thirds of which are attributed to added sugar[456]. As the intake of energy dense-nutrient poor foods increases, the diet quality of children suffers[7]. Children and adolescents have inadequate nutrient intake of several nutrients including calcium, fiber, and certain vitamins. These "problem nutrients" begin to surface during early school-age when children begin to express their independence through food choices[8910].

The Child Nutrition Reauthorization Act of 2004 mandates that schools across the country establish nutrition standards for all foods on campus[11]. Most current nutrition standards promoted in legislation or used by manufacturers, vendors and schools are proscriptive, restricting food items based on portion size, calories, fats, trans fats, sugars or sodium. An avoidance approach to nutrition policy may have the unintended consequence of eliminating foods that are beneficial to a child's daily nutrition. For instance, tight restrictions on sugar content may prevent vending flavored milks or yogurts, which are popular among children and teens and offer a substantial nutrient profile[12]. Similarly, standards that promote baked potato chips in place of fried chips, while lowering calories and saturated fat, do nothing to improve daily nutrition. An alternate approach is one that considers both desirable nutrients with those to limit utilizing information available on the nutrition facts label to evaluate a snack foods nutritional quality.

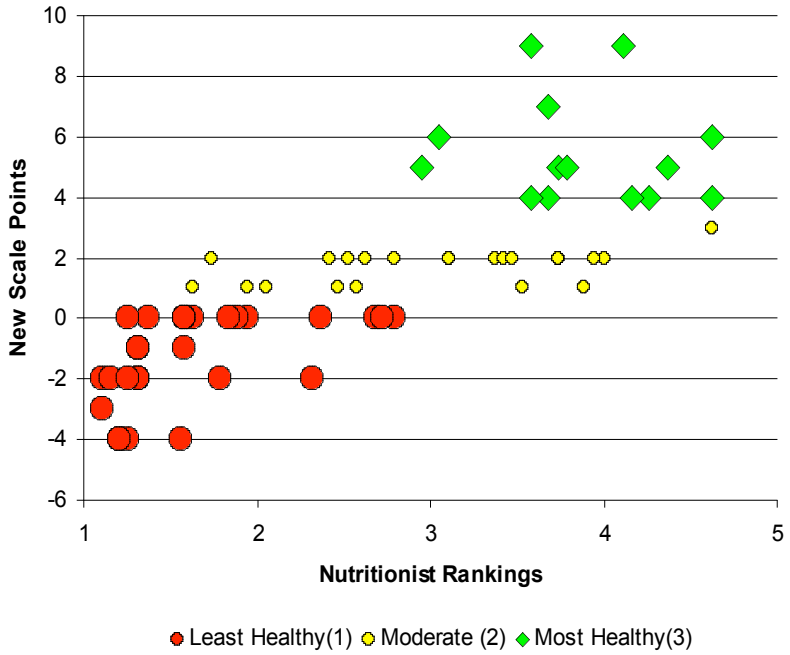
Nutrition Rating System Research

The first version of the Snackwise® software was designed in 2004 to evaluate the nutritional quality of snack foods utilizing 10 weighted nutrition parameters found on the nutrition facts label: total energy, total and saturated fats, fiber, sugars, protein, calcium, iron, and vitamins A and C. The software added or subtracted points according to whether the nutrition parameter contributes positively or negatively to the overall nutritional quality of the snack food. The software was designed as a simple method to evaluate the nutritional quality of snack foods weighing both nutrients that are desirable with nutrients to limit. Note: The most recent version of the software has added sodium as a parameter, utilizing 11 weighted nutrition parameters to determine the nutritional quality of a snack food.

Research Method: Nineteen experienced dietitians used the nutrition facts label to evaluate 64 snack foods, ranking them on a scale of 1 (least healthy) to 5 (most healthy). The same 64 snack foods were also evaluated using the software's 10 weighted nutrition parameters as a simple method to evaluate the total nutrient package considering both nutrients that are favorable with nutrients to limit.

Results: Dietitian's rankings showed close agreement in the evaluation of the 64 foods. Between observer correlation showed an intra-class coefficient of 0.78. The results of the software assessment of the 64 vended food items, when compared with the ratings of the 19 dietitians, also resulted in a Pearson's correlation between software and dietitians of $r = 0.78$. When evaluated utilizing the 10 nutrition parameters, the 64 tested snack foods formed a continuum of nutrient value scores ranging from lower to moderate to higher nutritional quality.

Conclusion: The Snackwise® software's weighted nutrition parameters reflected the opinions of 19 experienced dietitians when assessing the nutritional value of vended snack items. (Fig 1)



For ease of education the 64 snack foods were grouped into three categories, using symbols as green-"best choice", yellow-"choose occasionally", or red-"choose rarely". The cutoff points that distinguish the color categories were chosen arbitrarily based on visual separation within the continuum of rankings. The design of the software sought to create a simple method to help consumers identify and select snacks that are nutrient dense. Nutrient dense foods are those that provide substantial amounts of nutrients while limiting undesirable components such as higher calories, total fat, saturated and trans fat, sugar and sodium. There is considerable interest in nutrient profiling of foods to help consumers determine those foods that are nutrient dense[13].

The 2005 Dietary Guidelines for Americans, My Pyramid, and many health organizations such as the American Dietetic Association recommend that individuals choose nutrient dense foods.[14] The current, revised version of the Snackwise® software utilizes 11 parameters to determine nutrient quality, intended to reflect current scientific support for limiting sodium and calories while emphasizing nutrient density[1516].

Nutrient	Parameters
Calories	150 calories
Fat	35% of total calories
Saturated Fat & Trans Fat	10% of total calories
Sodium	230 milligrams
Fiber	10% Daily Value
Sugar	35% of total calories
Protein	5 grams
Vitamin A	10% Daily Value
Vitamin C	10% Daily Value
Calcium	10% Daily Value
Iron	10% Daily Value

The Snackwise® software provides a simple means to evaluate the nutritional quality of snack foods. Software based on nutrient density can be used by businesses, industry, hospitals, government agencies, universities and schools to provide an environment that supports healthier options.

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