Addressing Obesity and Other Diet-Related Diseases

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Main Points

• Obesity and diet-related chronic diseases are a consequence of the food environment

• The food environment should be regulated to protect the population
Popular Understanding of Dietary Behaviors Focuses on the Individual

- Diet is the sole result of an individual’s conscious choices
- Overweight people lack willpower
- Adults should be able to ignore or resist the temptation to overeat
Dramatic Changes Have Occurred in the Food Environment Over the Past 30 Years

- Relative decrease in cost of food
  - Today: 9% of income spent on food
  - 1971: 13% spent on food

- Increase in food availability – and “cues” to eat
  - Advertising, number of food outlets, vending machines, availability of food in non-food outlets

- Larger portion sizes since 1970s
  - Currently 2-5 times recommended amounts

- Growing sophistication of marketing
  - Eye-tracking technology, MRI, “atmospherics”
How does too much food make us eat too much?
Eating is An Automatic Behavior

Automatic behaviors do not require conscious direction

- Lack of awareness
- Lack of intent
- Lack of effort
- Lack of control, meaning the inability to stop if we choose

Automatic behaviors do not have to be automatic all the time; Whether they are automatic or consciously controlled depends on environmental context.

(Bargh, 1994)
We Cannot Ignore Our Surroundings

Stimulus -> Perception

Speed of light, sound or diffusion of smell

Perception -> Action Initiated

Neural transmission, 250 mi./sec.

Action Initiated -> Action Completed

Motor neurons

Action Completed -> Awareness

0.5 seconds

0.1 seconds

Source: Libet B et al., 1991
**Food Makes Us Hungry**

- Dopamine automatically secreted in response to food cues (and novelty)
- Brain dopamine is a powerful motivator, creating the desire to obtain the food and eat
- The pathways activated by food are the same ones responsible for addiction

People Have Limited Cognitive Capacity

Brain Processes

Cognitive < 5%

Impulsive, automatic > 95%

- We can think about only one thing at a time

- Everything else functions automatically
  - Humans can process 40-60 bits per second
  - But entire processing capacity (including visual system and unconscious) can process ~11 million bits per second
  - Most actions and decisions are NOT consciously directed

The Brain Relies on Shortcuts Called “Heuristics”

- Simple, efficient rules, hard-coded by evolutionary processes which have been proposed to explain how people make decisions, come to judgments, and solve problems--“shortcuts”
  - Sugar and fat
  - Brands
  - Prices
  - Salience
  - What other people do
  - Appearance/ color/ size/ shape

- Whether we use heuristics or analytic processing depends on the environmental context
Fruit Salad or Chocolate Cake?

- Study participants asked to choose snack
- Before choosing snack
  - First group memorized 2-digit number
  - Second group memorized 7-digit number
Limited Processing Resources Lead to More Cake

Percentage Choosing Cake

- Memorized 7 digits: 63%
- Memorized 2 digits: 41%

Source: Shiv B, Fedorikin A, 1999
Decisions are Context Dependent

- Decision errors are widespread and predictable. Choices are not always rational; influenced by framing and context
  - Order
  - Comparisons
  - Whether outcomes are losses or gains

**Chocolate Chip Cookie or Yogurt?**

**Time Horizons Affect Choice**

N=160

Choose Cookie

- Select one: 47.5%
- Same choice next week: 70.0%
- Yogurt next week: 90.0%

People are optimistic about exerting self-control in the future

How Do Food Outlets Make Us Eat Too Much?

• Atmospherics - (1970’s– Phil Kotler)

  – Engineering of displays, lighting, crowding, layout, scent, music, etc. to influence consumer purchases
  – Promote impulsive, automatic responses, without awareness of influences
Doubling shelf space increases sales by 40%

Source: Curhan RC, 1972
End aisle display increases sales 2-5 fold
Portion Sizes and Variety Play a Role in How Much People Eat

- When offered the largest portion rather than the smallest portion, subjects consumed 30% more calories.

- Larger portions led to greater calorie intake regardless of serving method and subject characteristics.

- People consume more when offered more variety.

Source: Rolls BJ, Morris EL, Roe LS, 2002
Other Environmental Influences (Priming)

- Music influences purchases:
  - People at restaurant playing classical music (compared to those listening to pop or no music)
    - spent more money
    - ordered more appetizers and coffee
    - ordered more desserts *

*North AC, Shilcock A, Hargreaves DJ, 2003
TV Commercials Influence What People Eat Without Awareness (Priming)

- Children watching TV with food commercials ate 45% more goldfish crackers than those watching the same show with non-food commercials

Multiple Mechanisms Lead People to Consume Too Much Without Awareness

- Conditioning
- Mere exposure conditioning (product placement)
- Automatic stereotype activation
- Mimicry

People cannot control what they are not aware of!
Most People Lack the Capacity to Compensate

- If people eat too much at one meal they don’t naturally eat less at subsequent meals.
- People cannot accurately recall what and how much they ate in the past 24 hours (under-report by 25-32%).
- People cannot accurately judge volume; we tend to underestimate.
- People tend to automatically choose foods of poorer nutritional quality when they are distracted or overwhelmed.
Summary

- Strong evidence indicates the environment influences eating behaviors in a causal fashion.
- People are often unaware of the causes of their excessive eating and they cannot avoid exposure to these causes.
Limited Portfolio of Interventions

- Menu calorie-labeling
- Guidelines for food at school
- Taxes
- Advertising regulations/guidelines (for children)
- Incentives to sell fruits and vegetables, add supermarkets
We Need to do MUCH MORE!

1) Stop blaming individuals
2) Regulate the food environment
3) Adapt effective policies used for tobacco and alcohol control

EXPAND CURRENT POPULATION STRATEGIES
Regulations that Control Tobacco Use

- Restricting places where smoking is allowed (clean air laws)

- Reducing tobacco accessibility (removing vending machines, placing machines behind counters)

- Taxing cigarettes

- Media campaign against the tobacco industry

- Frequent cues reminding people not to smoke
Alcohol Control Policies Are More Promising

- Licensing alcohol outlets
- Limiting alcohol outlet density
- Limiting hours of operation
- Prohibiting alcohol specials (e.g. 2 for 1)
- Prohibiting “all you can drink”

- Portion control (0.6 oz/drink)
- Alcohol taxes
- Banning drive-up window sales
- Social reference pricing
- Controls on displays
- Limiting sales of alcohol by age
Restaurants Need to Be Regulated for Chronic Disease Prevention

- Most menu choices currently increase the risk of or exacerbate chronic diseases
- Restaurant staff not required to have any nutrition expertise
- Default choices should be healthy choices
Potential Regulations for Chronic Disease Prevention

- Standardized portion sizes
- Standardized menu designs and labels
  - Develop order, designate where foods located
  - Make healthiest choices most salient
  - Highlight risks/benefits
Require All Restaurants to Have at Least One Choice That Won’t Increase Chronic Disease Risks

• “Ideal Meal” Combo– supplies ¼- 1/3 of daily nutrient requirements for average person:
  – 1 cup fruit,
  – 1.5 cups vegetables,
  – < 3 oz meat or meat equivalent,
  – 1-3 oz whole grain,
  – < 30% fat, < 10% saturated fat, <500mg sodium, <650 calories + available in 500 calories as well

(Less than 50% of restaurants have non-fried vegetables on menu, <12% have fruit*)

Use easy to understand icons and symbols to convey risks and benefits, like energy savings symbols.

- **Balanced meal**
- **Increases risk of hypertension**
- **Increases risk of heart disease**
- **Increased risk of obesity**
Officially Classify “Junk Food” as Unhealthy Impulse Food and Restrict It

• IOM recommends removing foods that are > 35% fat, > 10% Saturated fat, >35% sugar, snacks >200 cal/portion from public schools

• Why not restrict access in community settings too? (like alcohol for underage youth)

• Restrict placement of “impulse” buys near cash registers, end aisles, special displays
License Food Outlets and Implement Density Restrictions

- Prohibit non-perishable foods to be sold without a license (hardware stores, bookstores, car washes, vending machines in office building)

- Reduce access to most problematic foods: salty snacks, candy, sweetened baked goods, sugar-sweetened beverages
Media Campaigns

- Initiate “Truth”-style campaign about food marketing
- Negative messages make people more alert and thoughtful
- Reinstate the Fairness Doctrine to counter TV food commercials
“What goes into crisps goes into you. Some crisps contain 33% cooking oil...”
NYC Campaign Against Soda

ARE YOU POURING ON THE POUNDS?

DON’T DRINK YOURSELF FAT.
Cut back on soda and other sugary beverages.
Go with water, seltzer or low-fat milk instead.
Develop New Business Models for Supermarkets/Groceries

- Display foods so automatic choices are healthy choices
- Manage shelf space
- Limit displays targeting children
- Prohibit impulse marketing strategies for problematic foods
Reframe Dietary Choices as Not Solely a Matter of Personal Responsibility

• People are designed to overeat: typically eat without conscious direction and often make choices without conscious deliberation

• Unlikely that people are less responsible than 30 years ago; the changed environment overwhelms us

• Most people do not want to be overweight; among those who are, most have tried to lose weight unsuccessfully

• People are trying as best they can

• We overestimate individual capacity

• We underestimate environmental influences
What Works?

- Most options not attempted or evaluated
- Much uncertainty about potential effect
- We need to expand the portfolio of control options
- More than one policy likely necessary to stop obesity and other chronic diseases
Conclusion

- We cannot change people’s automatic responses to the environment and we cannot ignore the environment.

- The environment is the source of health and illness.

- Changing food availability, salience, and countering food cues may be more promising than expecting people to resist the environment on their own.