Bringing Food Concepts to Reality™

Developing Food Products For The Silver Age Consumers
“Aging is an extraordinary process where you become the person you always should have been.”

David Bowie
1947 - 2016
Why is there a need to re-think design of ELDERLY FOOD
We are forever trying to cheat time... and we have never won

- Macular Degeneration
- Oral tissue impairment
- Reduced taste and smell sensations
- Reduced salivary secretions
- Teeth loss, dentures
- Hypertension
- Bone weakening
- Diabetes
- Slowing of cognitive and intellectual capabilities
- Loss of lean muscle mass
- Reduced rate of gastric emptying, increased gastric pH
Medical and nutritional solutions are available...but

<table>
<thead>
<tr>
<th>Affected organ/system</th>
<th>Factor/condition</th>
<th>Nutrition solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased macular degeneration</td>
<td>Increase intake of antioxidants carotenoids (lutein, zeaxanthin), vit C, E, omega 3 fatty acids</td>
<td></td>
</tr>
<tr>
<td>Lowered rate of gastric emptying, digestion</td>
<td>Reduced nutrient absorption</td>
<td>Require more $B_{12}$</td>
</tr>
<tr>
<td>Gastric pH increase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of lean muscle mass</td>
<td>Require nutrient dense foods, higher protein</td>
<td></td>
</tr>
<tr>
<td>Bone loss</td>
<td>Require more calcium, vit D &amp; K, phosphorus, magnesium, fluoride</td>
<td></td>
</tr>
</tbody>
</table>
Is it enough?
More elderly suffer from malnutrition

found that nearly half of elderly people admitted to the hospital were malnourished, said Dr Lim. “When the results were published in a scientific journal in 2012, many doctors were surprised as they did not expect the prevalence of malnutrition as a developing country to be so high.”

“nearly half of old people admitted to hospital were eating poorly, a local study found”

because malnutrition in the elderly or those aged 65 and above has been largely undiagnosed until recently, said Dr Lim. According to her, the ignorance of changing nutritional needs with ageing is the major reason why people do not realise it when an elderly person is becoming malnourished.

Undernutrition in SG at alarming rate of 30-52 % !

Lack calories, deficient in protein, calcium, iron, zinc and vitamins B6 and B12, D, E and folate.

“growing concern that malnutrition rate among the elderly is going to rise”

They will take longer than a younger patient to recover from it, and they are at risk of a range of adverse outcomes as a result of that malnutrition, such as infections, organ dysfunction and impaired healing, which may lead to longer hospital stays, re-admissions and higher healthcare costs, she said. “People often overlook the fact that we are exposed to bacteria from everywhere all the time, so our body has a natural defence mechanism and antibodies to fight infections,” she pointed out. But these defence mechanisms are largely made of proteins, so a malnourished person who lacks protein and other nutrients is very susceptible to infections, she said. Malnutrition also delays recovery, around healing and rehabilitation, and raises the risk of medical complications, said Associate Professor Ichshya Merchant, a geriatrician at NHG.

“growing concern that malnutrition rate among the elderly is going to rise”

A malnourished patient has a poorer quality of life, and is more vulnerable to falls and fractures so he is weaker. Also, the vitamin deficiencies can affect muscles, bones, memory and nerves, leading to numbness, she said.

HOW IT HAPPENS

The elderly are particularly prone to malnutrition due to the physical changes that result from ageing, as well as psychological problems. Ageing affects not just sense of smell and taste, which cannot be eaten a lot less pleasant.

Some elderly people are unwilling to spend money or nutritious food, while others have mobility issues that make cooking difficult.

Lack calories, deficient in protein, calcium, iron, zinc and vitamins B6 and B12, D, E and folate.

ABOUT

30% of the elderly population are at risk of being malnourished

30% of the elderly population are at risk of being malnourished

Dr Lim: “The presence of depression, loneliness, lack of social support, financial issues and low nutritional knowledge can further compound the risks.” As their ability to eat and enjoy food diminishes, they are equivalent to just half a bowl of rice and when they eat porridge, they don’t add it.”

Adding just a teaspoon of sesame oil can make a bowl of porridge more nutritious.

WEIGHT LOSS NOT PART OF AGEING

A bowl of porridge was what housewife Hui Lai Keen, 70, often had for dinner on her own. When she was admitted to TGH for...
“**Design thinking** is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.” — Tim Brown, president and CEO of IDEO
DESIGN THINKING: A PROCESS FOR TARGETED PRODUCT DEVELOPMENT

Problem Space

Creating Choices
Making Choices

Solution Space

Creating Choices
Making Choices

Understand Observe Define Point-of-View Ideate Prototype Test
Operation Silver Mouth

Total number : 16
Age range : 50 – 65
Males : 6
Females : 9
Retired : 7

Focus of interviews : Perceptions of health, food consumption, eating out, cooking at home

Locations
– Choa Chua Kang
– Clementi hawker centre
– Admiralty food court
# Operation Silver Mouth

<table>
<thead>
<tr>
<th>People</th>
<th>Object</th>
<th>Environment</th>
<th>Message/Media</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly sitting in groups, happily chatting with food.</td>
<td>Chairs and tables</td>
<td>Air conditioned</td>
<td>Messages on table; “Please return your used cutleries and trays to the Tray Return station”</td>
<td>Cleaners wiping tables and clearing utensils</td>
</tr>
<tr>
<td>Working adults having lunch. There is a group of working adults sitting together</td>
<td>Baby chairs</td>
<td>Good air ventilation</td>
<td>“Pioneer Priority Seats”</td>
<td>Store owners taking orders and serving food.</td>
</tr>
<tr>
<td>Cleaners are cleaning the tables. There is a cleaner happily chatting with a customer eating.</td>
<td>Hanging lamps</td>
<td>Clean environment</td>
<td>“The healthier meal below 500 kcal”</td>
<td></td>
</tr>
<tr>
<td>Store owners are busy taking orders and serving food.</td>
<td>Food</td>
<td>Well lit</td>
<td>“Ask for less oil, less salt, more vegetables”</td>
<td></td>
</tr>
<tr>
<td>Chefs are busy preparing food for selling</td>
<td>Trays</td>
<td>Spacious</td>
<td>“Please queue here”</td>
<td></td>
</tr>
<tr>
<td>A mother picks out food for her baby to eat</td>
<td>Cutleries; Utensils</td>
<td>Clean and organised stalls</td>
<td>“Top up kiosk”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cleaning tools ; mop, vacuum</td>
<td>Food smells</td>
<td>“NTUC Value meal”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ceiling fans</td>
<td>Noisy</td>
<td>“Budget pick”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tray return station</td>
<td>Good interior Design (good for a food court)</td>
<td>“10% discount for card members”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kids recycled bins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kid’s handwash</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toilet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Operation Silver Mouth

<table>
<thead>
<tr>
<th>Question</th>
<th>Do you take daily supplements?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes</td>
<td>I don’t believe in supplements. I believe in good food. Because all supplements and all medicine have expiry date. Expiry date contain chemicals, so I don’t take. Even you know the traditional jamu, the Indian and Malaysian products, all I don’t take cause they have expiry date. This thing can keep very long, because they have chemicals inside, I don’t believe in it. I believe you take good food, you know there is this saying, your blood type of a diet? It will help. Because I believe your body has alarm. When you take wrong food, stomach pain. So you must notice then next time try to observe again, is it this food you cannot eat? Cannot accept in the stomach? So next time try not to take too much. Moderate la, I believe whatever you eat, must moderate.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>If we include these supplement nutrients into the food itself and assuming it does not affect the taste wise, would you spend more on it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes</td>
<td>Everything must try. I believe good food must try. You know like Japan people, their food, all is good right? You know Singapore everybody is learning so must try, why not try? Must try, but provided your marketing and promotion is good la.</td>
</tr>
</tbody>
</table>
"No motivation to cook except when my children come back on weekend, so I mostly eat outside food. I know it's not healthy but boh bian"

"I used to be able to eat you tiao just like that. Now I have to dip it my kopi so my dentures can bite through"

"Government say eat more healthy food, less oil, less salt. But when it's so tasteless how to eat?"

"Been eating more instant noodles these few years. I know they have a lot of MSG so I don’t add the powder. Quick and fast, settle a meal."

"My daughter always tells me to take vitamins but I don’t like. It's like taking medicine!"
THREE CONCEPTUAL APPROACHES

Humanising Fortification

Restructuring Food Textures

Modernising Nostalgia
Humanising Fortification

NUTRIENT SEASONING TOPPERS
Moves fortification away from associated medical mind-set

All the good stuff
• Calcium
• Vit B6, Vit B12, Vit D
• Folic acid
• Omega 3s (DHA+EPA)
Important nutrients geared for active ageing.

Fool proof dosage
Portion controlled in individual sachets to provide elderly 1/6 of their daily recommended daily nutrients.

Bags of flavour
More intense flavours such as laksa and braised meats to whet the appetite of the elderly
“Sample needs to melt rapidly above 60°C, gel system needs to fulfill that property”

“Gel structure needs to be soft and pliable enough to drape over rice yet not break easily during removal from package.”

“Instead of meat, we can consider use of concentrated meat or seafood stock as the gel base…”

“Size of veg and meat needs to be optimised, too large: weakens gel structure, too small: no texture.”
Restructuring Food Textures

Blended Diet VS
Restructuring Food Textures

CHALLENGES

APPEARANCE
limited by the mould variety, very few Asian food moulds
Restructuring Food Textures

CHALLENGES

THICKENERS
starch or gum based, starch based ones may be broken down by amylases in saliva
FLAVOURS
water added during puree-ing dilutes flavour of food, thickeners also dulls down the flavour of the puree

VOLUME
Dilution with stock or water increases the total amount of food needed to be consumed by the elderly person
Modernising Nostalgia

Coffee / Marmite Soft Bread

- Four times more protein than standard white bread
- Formulated to hold structure after soaking yet spoon-able after reheating
- Familiar flavour of coffee (sweet) or Marmite (savoury)
- Stored frozen so can be consumed anytime
- Reheat using microwave or steaming
Modernising Nostalgia

- Qualifies for Healthier Choice Symbol
- Formulated to be low G.I.
- Virtually no fat
- Contains soluble fibre and wholegrains
- Air dried

The Instant Noodle With An Identity Crisis

All the good stuff (again)
- Calcium
- Vit B6
- Vit B12
- Vit D
- Folic acid
- Omega 3s (DHA+EPA)
Administrative Process

Initial meeting to discuss problem statement

CLIENT

Prepares proposal for client acceptance

Preliminary research including ingredient sourcing, legislation, current market product

Preliminary trial to ascertain feasibility (if necessary)

Product development process begins

Considers proposal

Client accepts proposal

Discuss possible funding with grant entities
Product Development Process

- Brainstorming
- Product/Process Development at FIRC’s facilities
- 4-5 tastings and iterations (finetuning)
- Linking up with OEM
- Nutritional & Labelling
- Shelf life testing
- Scale up assistance (if required)
- Consumer evaluation
Insight gathering can be an integral part in the success of your product development

Ask your parents about what THEY really want to eat, not what YOU want them to eat.