FACULTY OF MANAGEMENT

November Exam

DEPARTMENT Department of Hospitality Management

MODULE	CULINARY STUDIES & NUTRITION THEORY
CODE	GTNT1Y1
DATE	10 NOVEMBER 2014
DURATION	120 MINUTES
TIME	09:00-11:00
TOTAL MARKS	100

EXAMINER	MRS D HEWSON
MODERATOR	MS I GEYSER
NUMBER OF PAGES	27 PAGES

INSTRUCTIONS TO CANDIDATES:

- **DO NOT HAND** in Question papers.
- Answer all questions in the answer book provided
- **Answer Question 5 on the fold out answer sheet provided at the back of the answer book**
- **This is a closed book assessment.**
- Read the questions carefully and answer only what is asked. Number your answers clearly. Write neatly and legibly. Structure your answers by using appropriate headings and sub-headings.
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.

QUESTION 1: Eggs:

1.1 Read **Annexure A** and answer the questions that follow:

1.1.1 What is the 'eggless egg' made from? (1)

1.1.2 What type of protein does this 'eggless egg' contain? (1)

1.1.3 What egg functions have the scientists managed to copy in the

1.1.3.1 'eggless egg' mayonnaise? (2)

1.1.3.2 'eggless egg' cookies? (2)

1.1.4 List four (4) advantages of using an 'eggless egg' – for each advantage give a quote from the text. (4)

1.1.5 What are the current problems that the developers are still working on in the creation of 'eggless eggs'? For each advantage give a quote from the text. (2)

1.1.6 Would the 'Banting diet' allow the use of this product as a substitute for egg, give reasons for your answer? (3)

[15]

QUESTION 2: MEAT

2.1 Read **Annexure B** and answer the questions that follow:

2.1.1 What does the acronym IQF stand for? (3)

2.1.2 What reasons does the author give that poultry producers in South Africa use to justify the practice of 'brining'? Quote from the text. (3)

2.1.3 What evidence does the author give to justify why the practice of 'brining' is unethical? Quote from the text. (2)

2.1.4 Explain in your own words what 'reworking' chicken pieces means? (2)

2.1.5 How does the practice of brining affect:

2.1.5.1 the chef preparing the chicken? (2)

2.1.5.2 the guest that is consuming the chicken (3)

[15]

QUESTION 3: VEGETABLES

3.1 Read the following quote from http://www.costacucina.com/tag/broccoli/ and **Annexure C** and answer the questions that follow:

Broccolini is a green vegetable similar to broccoli but with smaller florets and longer, thin stalks. Often misidentified as young broccoli, it is a hybrid of broccoli and kai-lan, both cultivar groups of Brassica oleracea. It was originally developed by the Sakata Seed Company of Yokohama, Japan, in 1993 as "aspabroc".

The entire vegetable is consumable, including the occasional yellow flower. Common cooking methods include sauteeing, steaming, boiling, and stir frying. In Japan, it is highly popular as a spring vegetable, and usually eaten steamed. Its flavor is sweet, with notes of both broccoli and asparagus, although it is not closely related to the latter.

3.1.1	How would Broccolini be classified within vegetables?	(2)
3.1.2	Define 'hybidizing'.	(2)
3.1.3	Why is Broccolini not a form of genetically modified or biotechnology seed?	(2)
3.1.4	According to the author why is hybridized broccolini a safer choice than genetically modified vegetables? Quote from the text.	(2)
3.1.5	What is the pigment present in broccolini?	(2)
3.1.6.1	Choose the best method to cook broccolini.	(1)
3.1.6.2	Explain why scientifically you selected this method of cooking for brocollini?	(2)
3.1.6	Explain why the colour of the broccolini would deteriorate if it is overcooked?	(2)
		[15]

Comment [HD1]:

QUESTION 4: KITCHEN BRIGADE

4.1 Read **Annexure D** and answer the questions below.

4.1.1 Identify 5 (five) causes of stress that the authors identify. (5)

4.1.2 What reasons do the authors give for 'Male chefs will be more aggressive than female chefs'? (3)

4.1.3 Discuss with evidence from the text the argument the authors make about rank in Fig 1: Average Aggression Questionnaire (AQ) total scores as a function of gender and rank within the kitchen hierarchy. (2)

4.1.4 In your opinion, what (if anything) has changed from kitchens 'pre- Escoffier'? Give five (5) reasons to support your argument. (5)

[15]

QUESTION 5: CHEMICAL COMPOSITION OF FOOD

5.1 Use the Multiple Choice section in your answer book to complete the following section. Make a cross on the corresponding correct letter in your answer book. Use the data provided in **Annexure E** to answer the following questions 5.1.19-5.1.25

5.1.1 An example of a wholegrain cereal is:

A. samp
B. polenta
C. cornflour
D. brown rice (1)

5.1.2 What part of the whole grain is the quickest to digest?

A. bran/fiber
B. endosperm
C. germ
D. aleurone (1)

5.1.3 Eating whole grain foods has scientifically been linked to reducing

A. heart disease
B. type 2 diabetes
C. gluten intolerance
D. both A & B (1)

5.1.4 Which of the following types of fat is considered most harmful from a health perspective.

A. saturated
B. unsaturated
C. polyunsaturated
D. trans (1)

5.1.5 Unsaturated fats

A. decrease bad cholesterol & increase good cholesterol
B. increase bad cholesterol and decrease good cholesterol
C. decrease bad cholesterol and decrease good cholesterol
D. increase bad cholesterol and increase good cholesterol (1)

5.1.6 Food examples of saturated fats are:

A. sunflower oil, peanut oil
B. coconut oil & palm oil
C. avocado & cashew nuts
D. salmon (1)

5.1.7 The basic unit of energy from carbohydrates is:

A. Fructose
B. Sucrose
C. Glycogen
D. Glucose (1)

5.1.8 A can of fizzy cool drink contains:

A. 5 teaspoons of sugar
B. 8 teaspoons of sugar
C. 10 teaspoons of sugar
D. 12 teaspoons of sugar (1)

5.1.9 Which of the following nutrients does not provide energy?

A. Proteins
B. Vitamins
C. Minerals
D. Both B & C (1)

5.1.10 The USDA recommended amount of fruit and vegetables according to 'My Plate' is:
A. ¼ of the plate
B. 1/3 of the plate
C. ½ of the plate
D. 2/3's of the plate (1)

5.1.11 The USDA recommended amount of **whole grains** as part of a _____cereal/grain serving according to 'My Plate' is:

A. ¼ of the plate
B. 1/3 of the plate
C. ½ of the plate
D. 2/3's of the plate (1)

5.1.12 Incomplete proteins are found in:

A. Animal proteins
B. Soy proteins
C. Gelatin
D. Both B & C (1)

5.1.13 Functions of fat in the body

A. Provides a backup energy supply for the body that can be used when carbs are low
B. Supplies essential nutrients in the form of fatty acids to the body, which are necessary for proper functioning
C. Increases one's feeling of fullness after eating
D. All of the Above (1)

5.1.14 The healthy eating pyramid recommends eating more foods from

A. the top of the pyramid
B. the base of the pyramid
C. the middle of the pyramid
D. both the top and the bottom of the pyramid (1)

5.1.15 The brown colour which appears on the exposed surface of a fresh apple is caused by

A. caramelization of sugar
B. denaturation
C. Maillard reaction
D. enzyme activity (1)

5.1.16 Which element present in food makes the nutrient organic?

A. Carbon
B. Hydrogen
C. Oxygen
D. Water (1)

5.1.17 Bread and Cereals are the main source of _____ in our diets

A. Carbohydrates
B. Fats
C. Proteins
D. Minerals (1)

5.1.18 Which monosaccharide is present in all disaccharides

A. glucose
B. fructose
C. invertose
D. maltose (1)

5.1.19 What two nutrients are blamed for the five lifestyle diseases in figure 6

A. Refined Carbohydrates
B. Saturated Fats
C. Proteins
D. Both A & B (1)

5.1.20 The highest level of abnormal LDL cholesterol is found in which age group of females in figure 5

A. 25-34
B. 35-44
C. 45-54
D. 55-64 (1)

5.1.21 Which race has the highest incidence of hypercholesterolemia in figure 2

A. African
B. Coloured
C. Asian/Indian
D. White (1)

5.1.22 Which age group experiences the highest level of cholesterol in figure 2

A. 25-34
B. 35-44
C. 45-54
D. 55-69 (1)

5.1.23 What percentage of the South African population has type II diabetes between the ages of 55-64 in figure 1

A. 16.7
B. 24.4
C. 13.9
D. 19.9 (1)

5.1.24 What percentage of south African woman are considered obese between the ages of 45-54 in figure 3

A. 22
B. 55
C. 4
D. 42 (1)

5.1.25 Obesity has a BMI of

A. 30 +
B. 25-29.9
C. <18.5
D. anything above 15 (1)

[25]

QUESTION 6: MILK

6.1 Read **Annexure F** and answer the following questions:

6.1.1 Using the text, give evidence of why the author thinks A1 milk is a health hazard? (3)

6.1.2 What solution does the author give to solving the A1 problem globally? (1)

6.1.3 Why does the author claim Amasi is A1 'free'? (2)

6.1.4 Explain the science behind 'fermentation' (5)

6.1.5 Discuss why the author says 'A probiotic is good, but fermented foods are better.'? (4)

[15]

Grand Total: [100]

Annexure A:

Eggless Eggs Exist and This Is What They Taste Like

Alice Park @aliceparkny

Aug. 18, 2014

Hampton Creek

No it's not science fiction.

The product's logo says it all. It's a silhouette of a tiny plant against the background of an egg shell, and it represents a revolutionary idea in food, questioning the land-laden, energy-heavy and labor-intensive way we grow so much of what we eat. It also represents the first time a company has created—and gotten to market—a food that acts like an egg and tastes like an egg, but comes from a Canadian yellow pea, not chickens.

Hampton Creek Foods launched its eggless mayonnaise just over eight months ago and its flagship product, Just Mayo, is already the leading mayo brand at Whole Foods Markets. In September, it will take over Walmart and Target shelves too and based on the growing interest in its products so far, the company expects to earn $35 million in sales this year.

During a recent visit to Hampton Creeks' research facilities in San Francisco, in a warehouse between the city's SOMA and Mission neighbourhoods, I found the cramped space was a hub of activity. It was here that founder and CEO Josh Tetrick began his journey two and a half years ago to find a new way to make food—starting with the egg. With the help of biochemists, food scientists, data scientists and chefs, he is rethinking where our food comes from and how it's grown. It's not about replacing what we currently have, he says, but about making it better – more nutritious, and cheaper by about 30%.

Tasting the Eggless Eggs

On the day I'm there, dozens of people—from biochemists to data scientists to chefs—were busy fulfilling the next stages of the company's mission. Tetrick says the company has already piloted eggless raw cookie dough as well as a liquid egg-like substance that can be used on French toast or even scrambled on their own. Now, they're trying to cull from the world of plant proteins to develop alternatives to sugar or even fat.

So how does it taste? The mayo is indistinguishable from regular mayo. So much so that celebrity chef Andrew Zimmern is a fan: in a blind taste test, he preferred the richness of Just Mayo to

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Hellmann's. The cookies are moist and crumbly, and even the raw cookie dough pretty faithfully replicates the taste of a traditional batter—but without, as Tetrick points out, the risk of salmonella poisoning or the burden on the environment that comes with raising hundreds of thousands of poultry.

That's why companies like Walmart, Target, Kroger, Safeway, Ralph's, Shoprite and Costco are signing deals to carry the company's mayonnaise. From the beginning, Tetrick says, Just Mayo was not meant to be a boutique brand aimed at the 1% who can afford to worry about the environment. Case in point: Just Mayo will also be at the Dollar Tree. That every-man mentality, which means the eggless egg could also help to alleviate hunger around the world as an important and cheaper form of protein, has also attracted some of the company's biggest-name investors, including Bill Gates, Yahoo co-founder Jerry Yang, financier Tom Steyers and Chinese entrepreneur Li Ka-Shing.

The Scrambled Challenge

But before that can happen, Hampton Creek's chefs and chemists are trying to tackle their biggest challenge yet — scrambled eggs. For the 30% of products like muffins, cookies and mayo in which eggs are just an ingredient and not the star of the show, their product has exceeded expectations. But when it comes to throwing the yellow-pea "egg" into a pan…that's been a challenge that's stumped — and continues to stump — the team. To move things along, Tetrick recently hired Trevor Niekowal from Chicago's trendy Moto restaurant, and Niekowal is eager to show me the latest version of their scramble-ready egg. He starts by whipping up some French toast using Wonder bread. It tastes indistinguishable from the real thing, with the right crispiness that comes from a sautéed-egg coating.

He admits, though, that heating the product on its own is still a work in progress. Back in April, the culinary team, which includes other Moto alums Chris Jones, a former Top Chef contestant and pastry chef Ben Roche, eagerly poured the product into the pan, only to watch the liquid evaporate into nothing. The next version, beefed up with stronger chemical bonds, stayed together a little too well, forming a flat crepe that didn't have any of the fluffiness of an egg.

For my taste test, Niekowal pours some of the egg mixture into a skillet and it looks no different than something cracked out of a shell and whipped into a slightly runny yellow liquid. It hits the pan with a slight sizzle and stays a little runny before fluffing up and rolling once it's been heated. The taste, however, still needs some work. The eggless eggs I ate at Hampton Creek tasted like, well, tofu. 'We'll tell that to our food scientists," says Niekowal.

The Sky's the Limit

But the database is starting to bear fruit — the team is perfecting a super-food high in protein that could potentially address malnutrition in developing nations, as well as looking for healthier ways to sweeten foods. "The world is so addicted to soy and corn, it's almost like we forgot about the abundance and complexity of the natural world," he adds. "I think that's unfortunate." There's a big world of plant proteins out there just waiting to be mined for taste, nutrition and health benefits. And for now at least, there's always the eggless egg.

Annexure B:

'SA chicken industry not ashamed of brine injection'

The much publicised practice of reworking of chickens returned to the producer (by thawing and re-injecting it with brine and then refreezing it for resale), would, if it was banned, have very little effect on the SA chicken production industry. But it would have a big effect on the SA chicken importing industry, where it is routinely done says Kevin Lovell, executive director of the SA Poultry Assoc.

Relatively few SA chicken producers rework their returned chicken in this way and it is debatable whether the practice is good for the industry or even economically viable, says Lovell. But even for those producers which do it (like Supreme Chicken, a subsidiary of Country Bird), returned chickens may be a total of 1% of their production. Of that 1%, half may be suitable for reworking as claimed in the media. (For packaging issues, for which reworking is not necessary; the other half, if reworked, is a small issue for both the company and the industry).

But for the importers, the practice is to import IQF chicken portions from Brazil and elsewhere, thaw them at regulated temperatures, sometimes cut them to suit local market requirements, inject them to the relatively high levels of brine which are normal in the SA market, and then refreeze them. This is apparently done by them on most consumer frozen products (though not on products which become ingredients of processed meats). Thus, for instance, one major importer has built a sophisticated microwave thawing facility.

If this reworking practice was banned in SA, then SA importers could not import "normal" export frozen chicken pieces from any chicken abattoir in Brazil (or elsewhere) which is approved for export to SA. In that event, frozen chicken product exports destined for SA would have to be specifically injected in the production country to the relatively high levels of brine prevalent on the SA market.

While Astral's CEO, Chris Schutte, has said that South African IQF chicken pieces are injected with 30-60% brine, Lovell says what is important is the amount in the final product. "For instance, you have a 1kg chicken; you inject 30% brine, before it is frozen, and some of it drips out. So the end product is a 1.25kg chicken - which means it has 20% brine."

Nonetheless SA levels of brine in IQF chicken are generally higher than those normal overseas. Most countries allow for brine injection of IQF chicken, although regulations regarding levels differ. SA regulations are outdated, says Lovell - his association has been recommending to government that they be updated. Currently the regulations boil down to the fact that only for whole frozen chicken (a small market), and only if the supplier of those whole chickens wants to call them "grade A", is extraneous material limited to 8%.

IQF portions - the major market - are not regulated; nor is the injection of "reworked" chicken. Thus, Supreme has, since recent publicity, been re-accredited as an export abattoir by the National Department of Agriculture – proof that it has not contravened the law in any way. Regarding the fact that brine is often made with table salt, which may increase health risks for people with, for instance, hypertension, Lovell says there is still considerable debate surrounding salt and hypertension.

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However the World Health Organisation does accept that table salt increases hypertension and if the SA Department of Health follows this, then those companies which are using table salt in their brine might have to change to other substances like sodium lactate.

They are, he says, happy that brine injection is here to stay because without it frozen chicken would be an inferior quality product. "Primarily, brine injection is meant to increase succulence of IQF chicken because, on a biochemical level, it combats chemical changes which take place following slaughter. "Secondarily (but important in SA), brine injection reduces the cost of the final product. If brine injection was, for instance, limited to the same levels of water in the fresh product, then the retail price of frozen chicken would rise by about a third."

Brine enhances meat flavour. So brine is primarily a functional solution but it also makes the final product more affordable. Fresh chicken in SA is not injected with brine but its moisture is sometimes increased via marinading (including kebabs), which adds moisture and weight. But chicken products generally are often injected with alginates in SA, to improve brine and water retention; all of these are plant-based, so issues related to halaal and kosher surrounding this practice do not arise in SA.

Warning South Africa: that's not just chicken you're eating

Sapa | 13 September, 2012 11:40

Consumers have been warned about the incorrect labelling of some frozen chicken products sold across the country. The health department said the warning applied to frozen chicken portions, also referred to as "Individually Quick Frozen (IQF)" chicken portions. "The description fails to inform the consumer that the product purchased by them is a composite foodstuff, consisting of chicken portions to which the processor added a brine-based mixture or solution," health spokesman Fidel Radebe said.

The brine-based mixture consisted of water, salt and food additives, including thickeners and flavourants, and was injected into the chicken portions. Hadebe said in some cases the percentage of the brine-based mixture added to the chicken portions was as high as 30 percent, of which 29 percent was water. He said this negatively affected quality from a nutritional perspective, and increased the amount of salt present. Incorrect, or sometimes absent, labelling on the products was not a food safety issue.

"It is considered important that consumers are made aware of the situation regarding the actual contents of these products and to thus allow them the opportunity to use their discretion when purchasing these products."

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ANNEXURE C

What is genetically modified food or biotech food (Bt) ?

Biotechnology allows breeders to swap genes between unrelated species, a huge step beyond conventional cross-breeding that limits hybridization to plants from the same families.

Right now, broccolini, a cross between broccoli and a Chinese kale, is having a run in the United States supermarket. However, broccolini is not a genetically engineered plant. It is a cross between two members of the same family, broccoli and kale. The resulting plants resemble broccoli florets, but with long stems like asparagus. The taste is close to broccoli, but the texture is smoother, more delicate. F1 hybrid seeds is a conventional cross-breeding process and is not a form of genetically modified or biotechnology seed.

Are the fruits (and vegetables) of bioengineering safe to eat? Are they safe for the environment?

More than 76 million acres of American farmlands are already planted with crops that have been genetically altered, including corn, soybeans, tomatoes and other produce. But some experts worry that there may be hidden dangers. "When you start making combinations of traits that nature hasn't made -- especially when you start designing proteins -- you need to be very, very careful," says Margaret Mellon, director of the Agriculture and Biotechnology Program of the Union of Concerned Scientists.

FOCUSING ON ALLERGIES

The chief concern is that genetically altered foods could spark serious food allergies. "Since known food allergens are proteins, foods with new proteins added via genetic engineering could sometimes become newly allergenic," Environmental Defense Fund biologist Rebecca Goldburg recently said at a public hearing held by the Food and Drug Administration. Someone who has never had problems eating corn, for instance, might suddenly develop an allergic reaction. Such problems might not show up until the new items hit grocery-store shelves.

People with serious food allergies usually protect themselves by avoiding foods or substances that cause them trouble. "In the case of genetically engineered foods, however, consumers may not be able to discriminate," Goldburg says.

No one can guarantee that such problems will never arise, of course. But advocates of bioengineering insist that allergic reactions are very unlikely because genetically engineered crops undergo extensive testing.

For instance, the FDA required the manufacturer of a new gene-altered soybean to do 1,800 tests, including analyses that compared its proteins, fatty acids and other components to conventional varieties. Genetically altered varieties undergo far more testing than conventionally bred crops, which often aren't tested at all, according to University of Edinburgh biologist Anthony Trewavas.

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DANGERS DOWN THE FARM

Even if bioengineered foods are safe for consumption, they may threaten the environment in ways that can't easily be foreseen, critics like the Sierra Club and the Environmental Defense Fund charge. Whether engineered for insect or virus resistance, genes could escape into wild varieties, some experts worry, possibly resulting in "superweeds" that begin to run rampant, disrupting the natural balance among competing varieties.

The Environmental Protection Agency in January directed biotech seed companies to ask farmers to plant traditional corn around the perimeter of Bt corn fields in order to create a buffer zone between the toxic pollen and butterflies.

Still, many biologists think the fears of environmentalists are overblown. "There's been a lot of hype and hysteria," says ecologist C. Neal Stewart Jr., of the University of North Carolina in Greensboro, pointing out that any risks are tiny compared to those associated with the synthetic chemicals currently used to control weeds and pests.

What's more, the furor over bioengineering has made governmental agencies more vigilant than ever. "Genetically altered plants are the most studied and most regulated crops in history," Stewart says.

BEYOND RISKS AND BENEFITS: A SIMPLE QUESTION

Ongoing research should help answer some questions about risks and benefits.

But Margaret Mellon thinks we should be asking a different question: Do we really need or want genetically modified foods?

"What most consumers want is truly fresh and truly varied foods. We don't need biotechnology to give us that," she says.

Before long, consumers may have a chance to cast their own vote. The FDA is expected to require labels that spell out loud and clear when a food contains genetically altered ingredients.

"No one anticipated the furor we've seen over gene-altered foods," says Clare Hasler, who directs the Functional Foods Program at the University of Illinois. "Right now, the future of biotechnology in agriculture depends on how Americans respond to these products. And no one's making any predictions."

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Annexure D:

When the plate is full: Aggression among chefs

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Aggression within the culinary industry has been an ongoing and underreported issue among professional chefs, not only in Australia but also internationally. Limited research suggests that there is high prevalence of aggression/bullying within the culinary industry, and that this may be a product of a unique combination of physical, psychological, and environmental demands embedded in a culture where such aggression is normalised. The current, survey-based, study aimed to assess whether chefs were indeed more aggressive than the general population, and if so, to examine the factors of perceived stress, rank within the kitchen hierarchy, gender, and licit substance use to identify where any differences may lie. Ninety-one Central Queensland based, Australian, chefs were recruited as participants in this study, con- sisting of 67 males and 24 females. Participants were asked to complete a self-report survey containing the Buss–Perry Aggression Questionnaire, a Workplace Stress Scale, and demographic questions pertaining to gender, rank, and alcohol and tobacco use. Results revealed that chefs were significantly more aggressive than a geographically similar general population. It was found that when looking at rank within the kitchen hierarchy, common chefs/line cook, particularly male chefs, were significantly more aggressive than other ranks within the kitchen. Conclusion and directions for future research are discussed.

1. *Introduction*

Recently there has been an increased interest in cooking and the culinary arts not only in Australia, but also internationally. This is evident in the popularity of television programmes, such as Masterchef and My Kitchen Rules, and the saturation of food related media where the life of a chef is portrayed as creative with the ability to express feelings openly through food. However, this portrayal of chefs may result in false impressions of the demands and expectations within the culinary industry.

While Harris and Giuffre (2010) assert the role of the chef originated in the military others attribute modern kitchen practices to Chef Escoffier (e.g., Gillespie, 2001) both of which involve hierarchical structures and an emphasis on discipline. Rank within the kitchen hierarchy denotes the varying levels of control an indi- vidual may have over creativity and business matters (Bloisi and Hoel, 2008). The sous chef, or the second-in-charge, generally is responsible for the day-to-day tasks of operating the kitchen, which includes ensuring that the common chefs/line cook on different stations and apprentices are working efficiently and to the head chefs expectations (Harris and Giuffre, 2010). Researchers have suggested that this strict, hierarchal, environment promotes opportunity for bullying and workplace aggression and violence (Johns and Menzel, 1999), however the issue of aggression prevalence is somewhat of a taboo subject within the culinary industry. Many victims of bullying within the industry suffer in silence with acts of aggression rarely reported (Bloisi and Hoel, 2008; Johns and Menzel, 1999).

Anecdotally, employment in the culinary industry requires unwavering dedication, responsibility and repetition (Bourdain, 2000). The daily occupational activities of a chef frequently expose them to negative physical and psychological demands, such as tight time constraints and high levels of perfectionism within a hot and cramped working environment (Murray-Gibbons and Gibbons, 2007). This can take a toll on the chefs' emotional and cognitive capacities, and research suggests that this may be expressed as aggression (Johns and Menzel, 1999). Aggression within the culinary industry may be distinct from other industries, as aggression in commercial kitchens is often a product of daily duties and stressors rather than being considered a hazard in and of performing

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occupational duties, such as working in the police force or nursing (LeBlanc and Kelloway, 2002). The kitchen environment and the occupational workload demands are arguably unique to the culinary industry (Bloisi and Hoel, 2008; Kang et al., 2010).

2. *Literature review*

2.1. *Aggression and bullying in the kitchen*

Aggression is usually typified by verbal or physical behaviour that has the intent of harming or humiliating another person (Anderson and Bushman, 2002). Bullying within a commercial kitchen context may include both direct and indirect aggression (Bloisi and Hoel, 2008) and it may also be reactive, such as an impulsive angry outburst, or proactive, such as a premeditated and calculated scheme to harm and humiliate a co-worker (Baumeister and Bushman, 2011). The use of both verbal and physical aggression is reported to be common within commercial kitchens (Bloisi and Hoel, 2008; Johns and Menzel, 1999; Murray-Gibbons and Gibbons, 2007). While verbal abuse may be used to motivate and intimidate co-workers who are not keeping up with the high standards or fast-pace of the service period (Bloisi and Hoel, 2008), phys- ical aggression (including behaviours such as throwing hot pans and food, punching or kicking co-workers or kitchen equipment) is reportedly part of the culinary cultural norm (Johns and Menzel, 1999).

Despite aggression being considered an antisocial behaviour by general society, aggression within the culinary industry thrives due to the occupational environment and the normalisation of aggression within culinary culture (Bloisi and Hoel, 2008; Mathisen et al., 2008; Rowley and Purcell, 2001). This differs from other industries with similar shift-work like rosters such as nursing (Kessler et al., 2008). According to Kessler et al. (2008), the emphasis in most occu- pations is to reduce the incidence of aggressive behaviour, rather than promoting it, however this trend is not readily apparent within the culinary industry.

According to researchers, aggression/bullying is seen by chefs to serve several purposes including as a means to enforce discipline, to increase productivity and to maintain the existing hierarchy within a given kitchen (Alexander et al., 2012; Bloisi and Hoel, 2008; Johns and Menzel, 1999). For example, interviews conducted by Johns and Menzel (1999) found that chefs' justified their aggressive behaviour as a protection against a loss of personal and organisational professional reputation, feeling the need to maintain the production of high quality food and their view of 'themselves on the plate'. The researchers further suggested that much of the aggressive behaviour shown by head chefs was due to frustration with, and the need to control, their kitchen and staff. One noted effect of this was staff of lower rank imitating the aggressive behaviours of a head chef and thus perpetuating the cycle of aggression within the culinary industry, a similar observation was made by Mathisen et al. (2008) following a large study of restaurant employees in Norway. Harris and Giuffre (2010) suggest that the use of aggression in the industry may be 'part' of being a chef. Bloisi and Hoel (2008) similarly argued that aggression within commercial kitchens stems from the expectations of culinary social structures and a workplace culture where aggression is seen as

part of a process of 'toughening up' novice chefs. Mathisen et al. (2008) reported that apprentice chefs were most frequently the targets of bullying within the restaurants they surveyed, and that the rate of bullying experienced far exceeded that seen in other industries. This in turn promotes a tolerance of aggressive behaviour as a means of ensuring personal and professional growth (Bloisi and Hoel, 2008).

Aggression may also be a psychological reaction to the occupational demands placed upon chefs in the workplace (Bloisi and Hoel, 2008). The kitchen environment itself can be seen as a catalyst for aggressive behaviour given the high demands inherent in quality food production and presentation, exposure to hot temperatures, long irregular working hours, and cramped workstations (e.g., Bloisi and Hoel, 2008). To better comprehend the prevalence and maintenance of aggression within commercial kitchens, the actors that may contribute to elevated levels of aggression among chefs need to be explored. Admittedly a number of these factors are not exclusive to the culinary industry, such as long irregular working hours or the predominance of one gender (Payne et al., 2012), however when

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combined with the occupational activities inherent to the culinary industry, a situation results which has been suggested to only exist within the culinary profession (Bloisi and Hoel, 2008; Kang et al., 2010).

1.1. Stress in the kitchen

Stress is an important factor when investigating aggression and aggressive behaviours within the culinary industry (as it is within other industries), as it is an integral part of the chefs' daily occupational activities (Kang et al., 2010). According to Rieger (2011) stress can be a difficult term to define and she suggests that stress can be conceived as a stimulus or event external to the individual, such as distressing things happening during an undefined period of time, with a biological or physical reaction, such as an increase in heart-rate or the release of adrenaline. Alternatively, stress may also be defined as a psychological state in which the individual perceives that the demands of a particular stressor are greater than his/her coping resources, making the individual feel overwhelmed and unable to cope (Rieger, 2011). The daily occupational activities of a chef can fall under both of these definitions, because the stimuli are often external, induce a physical response, and may outstrip the chefs' physical and psychological resources (Bloisi and Hoel, 2008). Several researchers have argued that the potential for a chef using aggression and aggressive behaviours is large, as this may be an inevitable way of dealing with the stressful demands of pro- fessional cooking without affecting the mass production of quality food (Johns and Menzel, 1999; Rowley and Purcell, 2001). Problems with staff, high standards of food production, and the fast-paced nature of service periods (from the time the restaurant opens to the public to kitchen close) are, according to one anecdotal source, the most common stressors found within commercial kitchens (Bourdain, 2000). Pressure to maintain one's reputation and frustration with fellow staff were also identified by Bloisi and Hoel (2008) as stressors that may lead to elevated aggression.

According to a survey of 40 UK-based chefs conducted by Murray-Gibbons and Gibbons (2007), the fast-paced nature of the service period often leads chefs to feelings of being out-of-control and under-qualified, or frustrated from working alongside unqualified colleagues. Stress may also be caused by the pressure to conform to the norms within not only a particular restaurant, but within the wider culture of the industry, with chefs reporting feelings of being undervalued by superiors, of excessive workloads, and frequent breakdowns in communication with co-workers (Murray- Gibbons and Gibbons, 2007).

Murray-Gibbons and Gibbons (2007) argue that chefs often use aggressive behaviour and/or licit and illicit substances to cope with these sources of stress – however these coping strategies were often ineffective for the chefs in their sample (Murray-Gibbons and Gibbons, 2007). Research by Chuang and Lei (2011) indicates differences between the short- and long-term coping behaviours chefs use in response to occupational stress, which in turn have both physical and psychological effects on the health of the individual chef similar to that found in other industries, such as nursing, office working, and teaching (e.g., Payne et al., 2012). The qualitative, survey-based research of Chuang and Lei (2011) suggests that long-term coping behaviours occasionally used in commercial kitchens, such as listening to music or exercising, tended to have positive outcomes on health. In contrast, the more common use of short-term strategies, such as aggressive behaviour or substance use, tended to be negative and often led to detrimental effects on both physical and mental health.

The use of licit and illicit substances is another important factor in the potential for aggression within the culinary industry. Drug use and dependence may be both a cause and an effect of aggression within commercial kitchens. Both stimulant and depressive substances may be used to elicit a desired effect dependent on the occupational dilemma faced by the chef (Mac Con Iomaire, 2004). According to an anecdotal source, the use of depressants, such as alcohol, cigarettes, and marijuana, may be used to "take the edge off" occupational stress, whilst stimulants, such as heroin or cocaine, may be used as a means to keep up with the fast-pace of service and the long working hours (Bourdain, 2000). Following interviews with ten US chefs, Kitterlin and Erdem (2009) suggested that chefs accept substance use as a means to stabilise or enhance job performance, rather than

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viewing substance use in negative terms. These findings, paired with a recent national survey of substance use in Australia where the hospitality industry was identified as being the most likely to have individuals working under the influence, and/or consuming drugs at work (Gates et al., 2009), suggests that examining the prevalence, and effect of, sub- stance use (both licit and illicit) within the culinary industry would be of value.

2.2. *Gender and the kitchen*

Differences between genders within the culinary industry may also be an important factor in the prevalence of aggression. Commercial kitchens have been considered a male-dominant occu- pation throughout history (Jonsson et al., 2008), and the gendered nature of the workforce may also factor into types, and severity, of aggression that are present (Harris and Giuffre, 2010). Surveys and interviews of 33 female chefs conducted by Harris and Giuffre (2010) suggested that female chefs may have to adopt particularly aggressive attitudes in order to be successful in the culinary indus- try. However, they also suggest the obstacles that stand in the way of female success in the culinary industry, such as discrimination and harassment, are similar to other industries; the only difference being in the unique occupational demands that chef's face (Harris and Giuffre, 2010).

While, in recent times the ratio of males to females may be gradually equalising, Harris and Giuffre (2010) argue that the acceptance of women as professional chefs within the culinary cul- ture may still present an obstacle with female chefs needing to be highly motivated to 'hold their own' when in a service period. This often means that female chefs begin adopting a more ruth- lessly aggressive attitude than the males, as has been seen in other industries (Harris and Giuffre, 2010).

In addition, due to the long, irregular hours that chefs generally work it has been suggested that female chefs are likely to experience higher levels of work/family conflict given societal per- ceptions of what it is to be a partner/mother. Similar to other occupations women may delay or forgo having children in order to be able to succeed as a professional chef with Harris and Giuffre (2010) noting that female chefs with children reported difficulty in splitting time between family and work, leading to greater frustration and stress. However, with the exception of Harris and Giuffre (2010) little attention (beyond anecdotal observations) has been paid to gender based differences in stress or aggression in the culinary industry.

The extant research examining the prevalence and correlates of aggression within professional kitchens reveals several impor- tant gaps. Firstly, given the predominance of small sample size, qualitative design studies (see Mathisen et al., 2008 for a notable exception) and the fact that much of the research has been con- ducted in the UK or USA there is potentially a lack of generalizability outside of these locations/situations, a point noted by several authors (e.g., Kang et al., 2010; Mathisen et al., 2008). In addition to this, while experience of bullying by restaurant employees has been quantitatively investigated (e.g., Mathisen et al., 2008), propensity for aggression and the use of aggressive behaviours per se has yet to be examined. The lack of quantified and psychometrically robust measures of aggression (or propensity for aggression) within the field makes assessing whether members of the culinary profession are more aggressive than relevant community norms problematic. In order to address this gap the current study will utilise a well-validated psychometric measure to assess propensity for aggression, the Buss–Perry Aggression Questionnaire (AQ, Buss and Perry, 1992) which has been shown to be a robust measure of specific aggressive constructs and behaviours (Palmer and Thakordas, 2005). Additionally it is suggested that using the AQ will address one of the main criticisms that is levelled at many of the studies looking at the prevalence and correlates of 'bullying' within the hospitality industry, that of ambiguous/contested definitions of bully- ing (e.g., Alexander et al., 2012; Mathisen et al., 2008). The following hypotheses were made based on the literature presented thus far:

H1. Members of the culinary profession will scored more highly on a measure of propensity for aggression than a geographically similar, community, sample.

H2. Male chefs will be more aggressive than female chefs.

H3. Stress scores will be positively correlated with the propensity for aggression that is, as stress increases propensity for aggression will also increase.

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H4. There will be differences in aggression propensity between ranks, with head chefs scoring the highest AQ totals and over- all propensity for aggression decreasing when moving down the kitchen hierarchy.

Due to ethical considerations, the current study was limited to ascertaining the prevalence of licit substance use and will explore the relation between alcohol and tobacco use and propensity for aggression.

3. Methodology

3.1. Participants

Ninety-one chefs were recruited via a non-exhaustive purposive sample of independent restaurants across the Central Queens- land region. The majority of respondents were recruited from mid to upper range restaurants in the regional city of Rockhampton (approximately 600 km north of the state capital, population circa 60,000) serving a range of cuisine up to, and including, haute cui- sine. No franchise or fast food establishments were targeted. The researcher approached various restaurants asking staff members if they would like to participate in the study by completing a hard- copy survey. Participants were between the ages of 18 and 65. Of the participants, 67 were male (73.6%) and 24 were female (26.4%). In addition, of the chefs that participated in the study, 23 were head chefs (25.3%), 9 were the second-in-charge (also known as sous chefs, 9.9%), 39 were common chefs/line cooks (42.9%), 16 were apprentices (17.6%), and 4 were substitute cooks (i.e., food and beverage managers except when there are staffing shortages) (4.4%). Sixty-two chefs identified themselves as drinkers of alcohol (68.1%) and 34 chefs smoked cigarettes (37.4%). The study was approved by the CQU Human Research Ethics Committee and was conducted within APS ethical guidelines. Confidentiality and anonymity was maintained by omitting personal information from the data that were not directly relevant to the study, such as ages and names of the individual or restaurant.

3.2. Materials

Participants in the study were asked to complete a hardcopy survey, consisting of several self-report based scales and questions to assess propensity for aggression and the potential contributing factors of stress, gender, rank within the kitchen, and alcohol and tobacco consumption. Of the 144 surveys distributed to kitchen staff, 91 were completed and returned for analyses (63.1% return rate).

4. Results

On average, chefs (M = 76.95, SE = 2.18) were significantly more aggressive than the general population (t = 2.33, p < .05) as specified by the AQ total normative data from the local region (M = 71.87, SE = .26). On the AQ subscales, chefs showed significantly higher results than the Central Queensland normative data on the A (M = 18.34, SE = 5.57, t = 2.06, p < .05), VA (M = 14.41, SE = .48, t = 2.02,
p < .05), and H (M = 21.8, SE = .7, t = 2.86, p < .05) subscales. How- ever, the chefs PA did not differ significantly (M = 22.4, SE = .81, t = 1.13, p > .05) from the normative data for the region. It was found that male chefs scored significantly higher on AQ total scores (M = 79.72, SE = 2.48, t = 2.56, p < .05) than the male normative data, again scoring significantly high results on the VA, A, and H sub-scales, but non-significantly higher on the PA subscale. Female chefs had slightly higher (but not significantly so) AQ scores (M = 69.21, SE = 4.19, t = .37, p > .05, *ns*) than the female norms from the area, which was also a trend across all of the AQ subscales. Within the culinary industry, male chefs were significantly more aggressive than female chefs, t = 2.17, p < .05.

When AQ scores were examined by individual rank, common chefs/line cooks (M = 82.03, SE = 3.19) were found to be the only group with significantly higher aggression t = 3.19, p < .05 than nor-mative data (M = 71.87, SE = .26) on the overall AQ scores. This group also recorded significantly

higher scores on all the AQ sub- scales when compared to the Central Queensland normative data, whereas other groups did not. Interestingly, Apprentice chefs were the only other rank to record significantly high H subscale scores (M = 23, SE = 1.61, t = 2.38, p < .05). A summary of the results is given in Table 1.

Within the culinary industry, a one-way ANOVA showed that there were no significant differences in AQ between ranks, this along with distribution across genders is displayed in Fig. 1.

Stress among chefs (M = 18.7, SE = .68, t = .48, p > .05) did not significantly differ from the WSS normative data (M = 18.4) as specified by the American Institute of Stress, both as a whole and among both gender and rank. Overall only 15% (n = 14) of the participants fell in the Severe to Highly Severe stress categories while 34% (n = 31) and 31% (n = 28) recorded No or Low stress respectively. As a note of interest, 8 of the 24 female chefs (33.3%) and 23 of the 67 male

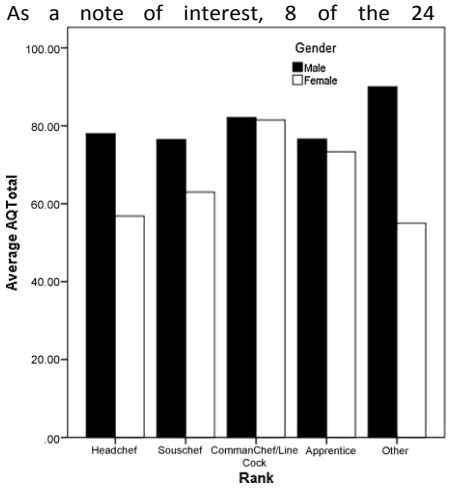

Fig. 1. Average AQ total scores as a function of gender and rank within the kitchen hierarchy.

chefs (34.33%) indicated on item E of the WSS that work pressures interfered with family or personal life either "often" or "very often". Stress was found to be highly positively correlated with AQ scores r = .54, p < .05. AQ (total and subscale) scores were found to differ significantly across the different stress ratings with those meeting the criteria for Moderate or higher stress levels indicating significantly higher propensity for aggression as can be seen in Table 2. While there was no significant interaction between gender and stress category (Chi square, p > 0.05) there was a trend for male chefs to indicate higher levels of stress. For example, 50% of female chefs fell in the No stress range compared to only 28% of men, and 25% of male chefs indicated experiencing Moderate stress compared to 4% of women, this difference disappeared in the higher categories however it must be noted that cell counts less that five occurred at these elevated levels of stress. There was also no significant relation between rank in the kitchen and stress category (Chi square, p > 0.05). While the highest average stress rating was recorded for common chefs/line cooks (followed by head chefs then apprentices) and half of the participants meeting the criteria for Highly Severe stress were common chefs/line cooks small cell sizes make conclusions tentative at best.

5. *Discussion*

The primary aim of the current study was to test the hypothesis that chefs (regardless of rank or gender) would score more highly on a measure of propensity for aggression than a geographically matched community sample. Strong support was found for this hypothesis with the current sample of chefs scoring significantly higher AQ totals than the community sample. Chefs also showed higher propensity for verbal aggression and were more angry/hostile, but no more likely to engage in physical aggression, than the average community member. This overall pattern of elevated propensity for aggression was found to apply mainly to male chefs who recorded significantly higher scores on the AQ (and all subscales) than the female chefs in the sample.

Indeed, although female chefs were found to have higher AQ and subscale scores than women from the community the observed differences were non-significant. These findings support the observations of other research in the area which suggests that verbal aggression (and verbal bullying) tends to be particularly common, and almost expected, within the culinary industry (e.g., Alexander et al., 2012). While the current data cannot answer the question of whether aggressive chefs are 'made' by the pressures within commercial kitchens, or whether aggressive individuals are attracted to the work environment, the significantly elevated AQ scores observed suggests that, at the very least, aggressive behaviour is seen as 'part of the job' here in Australia as elsewhere. Importantly, this research extends the finding of high levels of aggression within the industry to a non-metropolitan, regional area, something that several researchers have indicated the need for (e.g., Bloisi and Hoel, 2008; Kang et al., 2010).

The finding that female chefs in the current sample are no more aggressive (or hostile/angry) than women in the general community and no more stressed than male chefs runs somewhat contrary to the observations of Harris and Giuffre (2010). Whether this is due to the regional/rural nature of the local area, a cultural difference between Australia and elsewhere in the world (or indeed unique to the specific regional area) or a sign of shifting employment profiles is unknown. Importantly while approximately a third of the female chefs surveyed indicated finding balancing work and family life stressful a similar proportion of male chefs (34%) indi- cated the same. This suggests that work/life balance may be a universal obstacle within the role of being a professional chef that may lead to frustration and thence aggression, and one which the industry needs to acknowledge and examine. Future studies in other non-metropolitan areas examining gendered experiences of the culinary industry are clearly needed as is an acknowledgement of changing family roles.

The hypothesis that head chefs would have the highest AQ scores, with aggression propensity decreasing along with 'status' in the kitchen hierarchy was not supported by the results. Contrary to expectations, common chefs/line cooks (middle of the kitchen hierarchy in Australia) recorded significantly higher scores on the AQ and all of the subscales than any other rank (and the general population) which may warrant the investigation of this specific population in future research. This finding is contrary to the conclusions of other studies (e.g., Bloisi and Hoel, 2008; Johns and Menzel, 1999) and anecdotal accounts (e.g., Bourdain, 2000) where head chefs were suggested to be the most aggressive of the ranks within the kitchen hierarchy. While this may be reflective of differ- ing research approaches (i.e., small sample, qualitative interviews vs larger sample, quantitative approach) it may also be due to these employees being the 'backbone' of the kitchen, taking orders from the head and sous chefs while being held responsible for the cooking to the head chefs high expectations and teaching apprentices (Bloisi and Hoel, 2008). Apprentices may also be expected to take on more than their share of the burden of kitchen activities, often being tasked with repetitive and 'unimportant' jobs (Johns and Menzel, 1999). This has been suggested to leave them feeling bitter but unable to express these feelings because of fear of, and intimidation by, their superiors (Johns and Menzel, 1999) - this is supported by the significantly elevated levels of Hostility recorded for apprentice level participants in the current study. Junior members of staff have been shown to be the primary target of bullying and aggressive behaviours in commercial kitchens with this being perceived as a means of socialisation/indoctrination into the culinary industry (e.g., Alexander et al., 2012). Given that apprentices have been noted to reflect the behaviours of their direct superiors (Bloisi and Hoel, 2008), in this case common chefs/line cooks, the elevated propensity for aggression in these two cohorts may be linked.

Annexure E:

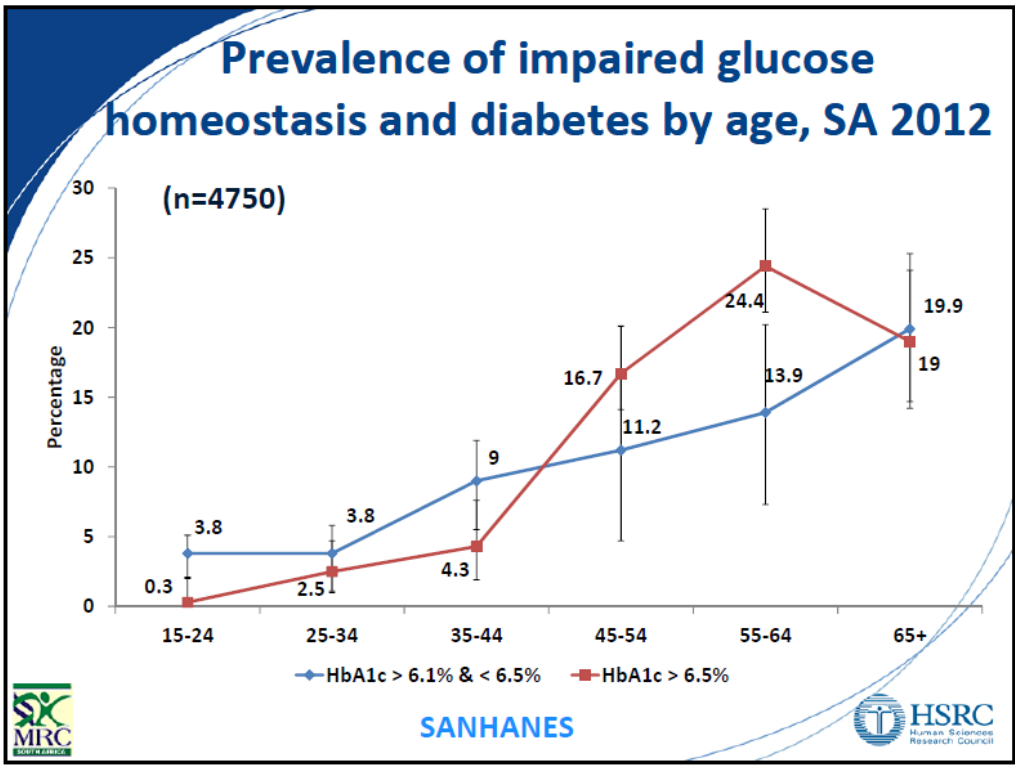

Figure 1: Prevalence of Type 1 and Type 2 diabetes by age in SA 2012

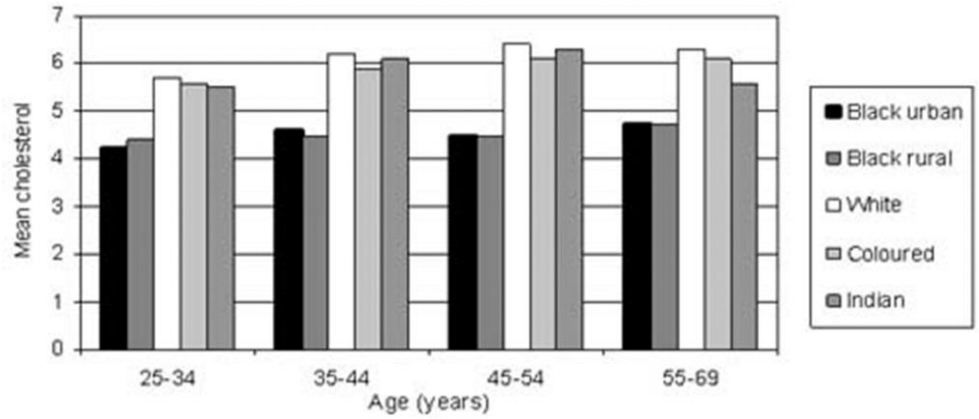

Figure 2: Bad Cholestrol levels by race in SA

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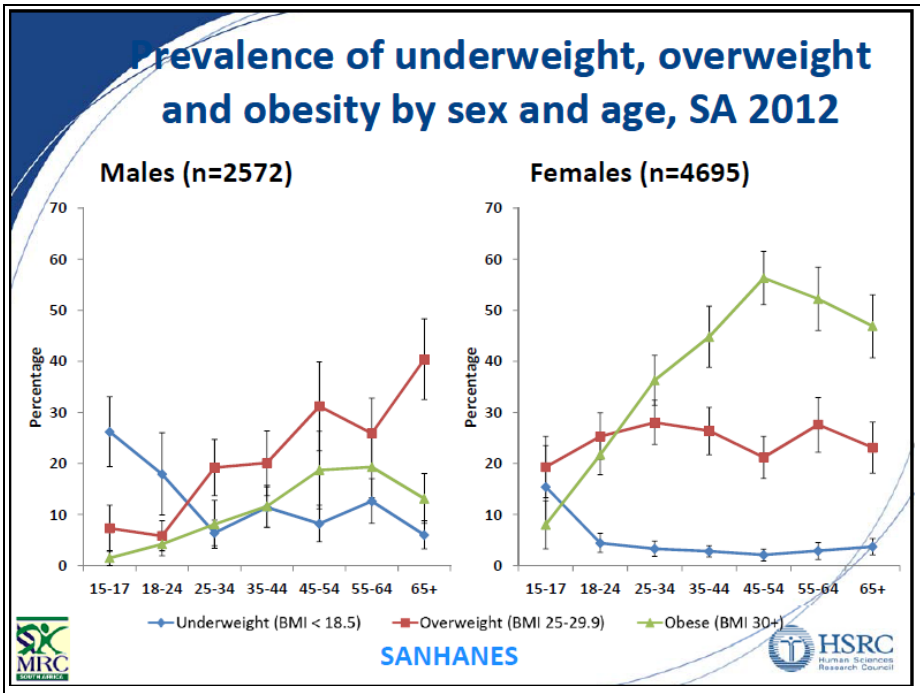

Figure 3: Prevalence of underweight, overweight and obesity by sex and age SA 2012

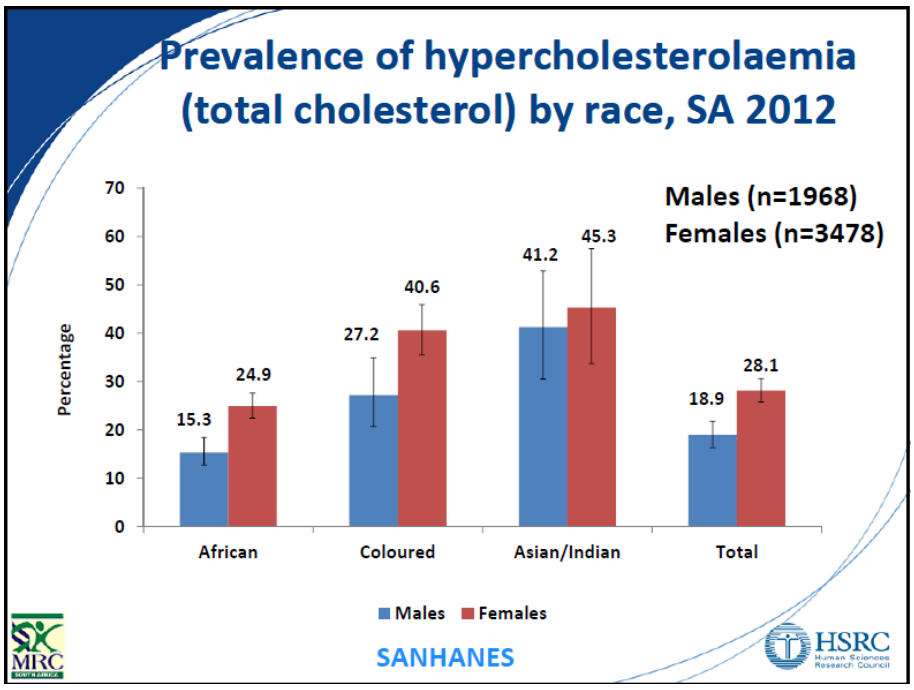

Figure 4: Total cholesterol by race 2012

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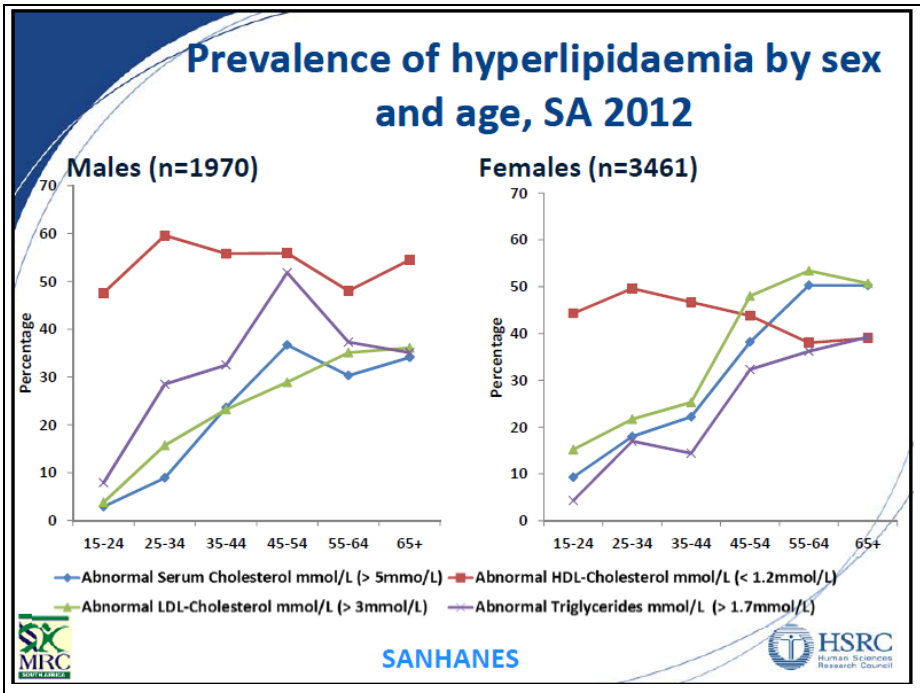

Figure 5: Prevalence of 'high cholestrol' by sex and age, SA 2012

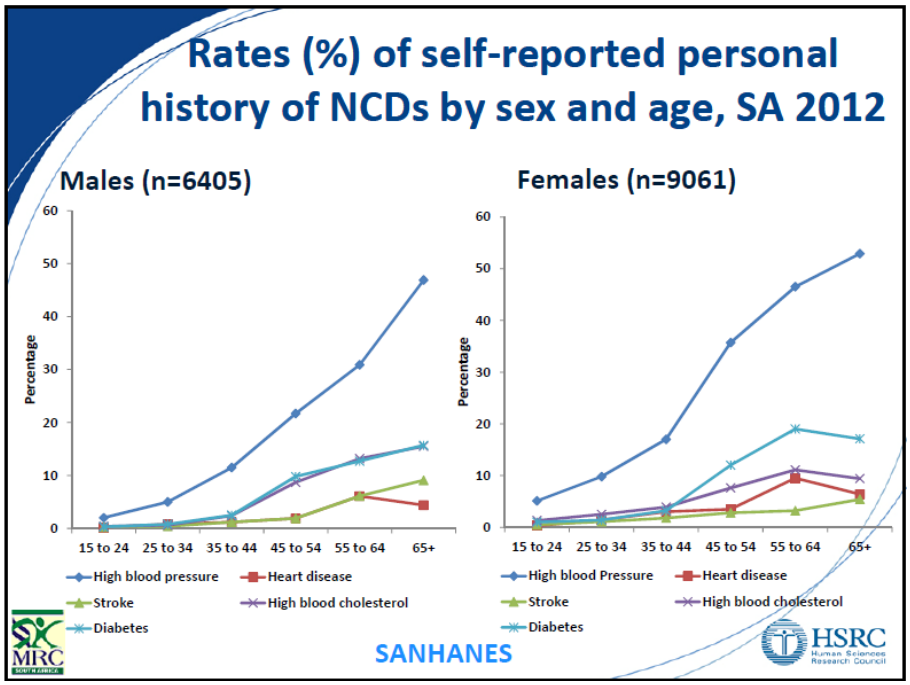

Figure 6: History of non-communicable diseases (NCD) by age and sex in SA 2012

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Annexure F

Is Milk Making You Sick? The Modern Dangers of Milk You Must Be Aware Of

Posted October 19, 2011.

Why Milk from Certain Breeds of Cattle Is Toxic

In 2007, Dr. Keith Woodford wrote a book called Devil in the Milk. In this text, he explains exactly why milk from certain cows is far more toxic in the body than milk from ancient breeds of cattle.

Dr. Woodford is a Professor of Farm Management and Agribusiness at Lincoln University in New Zealand. In his book, he discusses the dangers of certain forms of casein in milk versus others. As you may expect, because dairy is such a large industry worldwide, Dr. Woodford has received a great deal of grief and badgering through the press for voicing his concerns about what he calls the "milk devil."

However, as he says in the introduction to his book: "I have now got to a stage in life where some things are more important than others. I believe [this] story is one that needs to be told." Dr. Thomas Cowan, an M.D. practicing in San Francisco, California, wrote the forward to Devil in the Milk. He tells us that milk, or casein sensitivity, has been a long-time issue with his own patients, which is usually accompanied by gut disorders. As he explains:

A certain protein called beta-casein is found in the milk solids.

Beta-casein is a long chain of amino acids - 229 to be exact.

Typically in ancient breeds of cattle, an amino acid called proline is number 67 in this long chain of amino acids.

This protein found in ancient breeds of cattle is called beta-casein A2.

5,000 years ago, a mutation happened in this long chain of amino acids.

When the mutation occurred, an amino acid called histidine replaced proline.

This new protein is called beta-casein A1.

What makes beta-casein A1 milk so different and so dangerous?

According to Dr. Woodford's research, once the mutation in beta-casein occurred, the new beta-casein A1 breed of cattle spread rapidly throughout Western countries. And unfortunately, this form of casein has been linked with type I diabetes, heart disease, autoimmune disorders, autism, and schizophrenia. Throughout his argument in Devil in the Milk, Dr. Woodford cites over 100 papers found in peer-reviewed journals.

As he explains, beta-casein A1 is different from the more ancient version of beta-casein because of the proline /histidine switch that took place 5,000 years ago.

In both beta-casein A1 and A2, there is a side chain amino acid that comes off amino acid 67.

This side chain amino acid is called BCM7.

BCM7 is a powerful opiate and responsible for much of the grief related to current milk consumption in the United States.

This includes various forms of casein sensitivity related to autism and autoimmune conditions.

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This also includes minor irritations, such as BCM7's ability to bind to mucous membranes in the nose and stimulate mucous secretions.

BCM7 is less likely to be absorbed by those with a healthy gut.

Is milk really the enemy? If milk has been making you sick, it could be because of the type of milk you are drinking.

Even though BCM7, which is an amino acid opiate, is present in both forms of beta-casein A1 and beta-casein A2, the older breeds of cattle have a stronger hold on this dangerous little amino acid. This means that in older breeds of cattle that have the beta-casein A2 structure, the opiate is far less likely to become free in the body.

Beta-casein A1, which is found in cattle populating nearly all dairy farms in the United States, has a weak bond to this dangerous opiate called BCM7. Biochemically, histidine simply cannot hold on to BCM7 for very long. What ends up happening? Much of BCM7 gets into our bloodstream, especially in those who have a permeable or "leaky" gut. The absorption of BCM7 causes all sorts of changes in the immune system, the blood vessels, and in the brain.

Amasi: A Traditional Drink Made with Milk That Is Free from Beta-Casein A1

Amasi is a food and beverage that is popular in South Africa. Similar to yogurt and kefir, amasi is fermented and generally made with cow or zebu milk. Traditionally, fermentation usually takes place in a gourd or hide sack, although leaving raw milk out to ferment, or clabber, will also produce amasi.

The milk used to make amasi is generally harvested from zebu cattle, also known as Bos indicus. All ancient breeds of cattle, such as the zebu cattle, produce milk that is free of beta-casein A1.

Zebu cattle:

Are common throughout Africa, India, and throughout much of Asia.

Have large, floppy ears and a fatty hump between their shoulders. For this reason, they're also called "humped" cattle.

Are ancient cattle - which means that the milk they produce is free of beta-casein A1.

Like other forms of fermented dairy, amasi has a number of health benefits. When zebu cattle are fed a green diet of grasses and forage, the milk that they produce is high in:

Omega-3 fatty acids

Conjugated linoleic acid (CLA)

Vitamin K-2

Beta-carotene

A probiotic is good, but fermented foods are better.

Friendly bacteria are essential to creating a balanced and healthy inner ecology. Strangely, the modern diet typically does not include fermented foods. In traditional cultures throughout the world, such as in South Africa where amasi originated, fermented foods and beverages are served with every meal and even as a fortifying snack.

But how to get Amasi in the U.S.? Only one company is making this healing beverage available. Click here for more information: www.beyondorganicinsider.com/becomeaninsider.aspx?enroller=43987

Because the standard American diet is missing these vital nutrient-friendly bacteria, and because antibiotics are prescribed almost ubiquitously in the case of infection, many Americans are overwhelmed with chronic infections and other serious immune disorders.

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In order to remedy the situation, probiotic supplements are often used to restore microbial balance within the body.

After all, beneficial microbes outnumber our own cells 10 to 1.

This means that we are roughly 90% microorganisms and 10% human cells.

Relying on a probiotic supplement is good in a pinch. However, fermented foods offer far more than a supplement ever could. This is because:

Fermented foods provide a food matrix for the microbes to survive in while they travel through your digestive system.

Fermented foods, especially those that are homemade or prepared using traditional processing methods, contain a greater number of living bacteria than you would find in a probiotic supplement.

This makes fermented foods a more cost-effect alternative to a probiotic supplement.

To boot, because friendly microbes do much of the work for you, fermented foods are far more digestible and nutrient-dense than non-fermented foods.

Friendly bacteria also dampen the inflammatory response and help to heal a damaged gut wall.

The problem with milk may not be milk itself, but rather the type of milk that we are consuming.

While many Americans find that they need to go on a gluten-free, casein-free diet, it is worthwhile to consider the information that Dr. Woodford presents in his book, Devil in the Milk. The problem with milk may not be milk itself, but rather the type of milk that we, as a country, are consuming. After all, milk is an ancient food that has a long list of health benefits, especially when fermented.

While milk from cattle that is free of beta-casein A1 is hard to come by in the United States, consumer demand can create the motivation for dairy farmers to change the breed of cattle that they use in their farms. In the meantime:

Although sheep and goat milk do not have the same benefits as cow milk and are often grain-fed, these milks are free of beta-casein A1.

If you tolerate raw dairy and if it is available to you, make sure to ferment your dairy using the Body.

Truly fermented dairy can heal the gut, strengthen immune function, and cleanse the body of toxic materials.

What to Remember Most About This Article:

Milk from certain cows can be more toxic to the body than milk from ancient breeds of cattle. A mutation in a milk protein has occurred in modern milk, potentially causing heart disease, type I diabetes, autism, schizophrenia, and autoimmune disorders.

A traditional South African drink called amasi is free from this mutated protein. Raw milk is harvested from ancient breeds of zebu cattle and fermented to produce a beverage full of health benefits. Fermented foods and beverages like amasi are vital to the standard American diet.

For the many Americans that rely on a casein-free and gluten-free diet, the issue could be caused by the type of milk that they are consuming. At home, it's best to ferment dairy to heal the gut, boost immune function, and detoxify the body of harmful materials.

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