

Food Safety Management In Catering Establishments In Malta



Author Joseph Casingena .	2016
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Teacher Mr Markku Halmeenmäki	
<p>The aim of this bachelor thesis is to produce a schematic view of how legislation both European and local has actually been successful in the field of effectively minimising the incidence of food poisoning. The world yearns for progress thanks to laws and directives and to better education of the general populace in the field of healthy and safe eating habits and a wide contribution has been consented thanks to the output of The WHO and its Codex Alimentarius based in Rome , The FAO of the United Nations, The UNESCO , The General Agreement of Tariffs and Trade 1994 and its setting up of Sanitary and Phyto Sanitary Standards and revision of the technical barriers to trade , just to mention but a few have all been instrumental in such a progress but yet on a local dimension one must not ignore the challenges we face in our country. HACCP is European Regulation 852 2004 and Malta being a member state had to become compliant as from January 2006. The law was not intended to be a shock as it was also Directive EEC 93-94 12 years before however how can a law of this magnetude affect a country which has been so effected by the political turmoil that was happening in neighbouring African countries and the Eastern Block? Thousands of political asylums have sought refuge in our country compounding pressure on the labour market , we are here referring to the most densely populated country in the world , almost half a million on a 19 mile stretch of land . Such refugees have in the main saught employment either in food manufacturing or the catering industry, most of which have minimal knowledge in food hygiene. Other issues are global warming and the fact that the height of the tourism market in this country is spring/summer thus employability is mainly part time and that limits training procedures ,besides the fact that industry is mainly run by SME's who face budgetery constraints to ensure that staff is adequately trained in hygiene and the trade.</p> <p>The main goal of this study is to look into the progress and achievements that have been acquired through the years and achieve an insight of how well these are being conducted. I shall start of with the theoretical part as this forms the basis of the study that creates a balance between the tacit and the true reality. The laws are one of the main features of this study and we are going to see how well these have been implemented. Chapters 6 and 7 deal with the implicit element of my study as they deal with factual reality of the Maltese situation through statistics which is then further debated in the empirical part of my study. Main conclusive thoughts will be manifested through the acquisition of questionnaires that will be distributed to the general food industry workforce.</p>	
Keywords HACCP, Food Safety Management ,food hygiene, the catering industry	

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1 Introduction

Thanks to this modern economy growth more and more people in Europe are now more familiar with the idea of dining out at least once a week also there are now more of those who graze on snacks that are procured from shops instead of enjoying a home made meal at home due to advent of a more stressful life that they have to cope with. The demand of eating out also increased due to the influx of tourism that continued to increase in these last two decades.

The main reason I have chosen this topic is because I have qualified and teach the subject in Food Safety Management and consider myself as an expert in the field (Jnakowitz 2005) however my expertise has always been theoretical and have never found the opportunity to scrutinise the effect and the impact of today's trends and conditions. Teaching Food Safety Management as from scholastic year 2005 apart from my kitchen and larder subjects, I have grown to love the subject (as it is highly related to kitchen and the industry in general) and wanted to formalise my knowledge by embarking on an HACCP course at level 5 at The University of Reading UK. Having been successful in Advanced Food Hygiene and HACCP qualifications now I need to extend my knowledge on research and look for facts and results. ITS is the showcase of the catering industry in Malta and I want to know whether the school has left a good impact in the industry in relationship to Food Safety Management.

1.1 Problem Statement and limitations

The question I put in my research is "How are food safety regulations being respected in my country?" This is a small country of less than 400,000 populace whose GDP mainly consists of tourism and other related activity accounting for at least 40% of the nation's economy (NSO). Even at this early stage I am convinced that the average stake holder abides by the rules The purpose of my research is to ask a set of questions related to the progress of European and local legislation, education plus the advancement in technology and see how they effectively contributed to minimise the incidence of food poison. In theory there should have been an improvement but this has been compounded by other factors which I shall divulge later on in this reading. The theory is the implicit aspect of my research because as one can imagine one can compromise on economy for example using second class mozzarella instead of fresh buffalo or one can also compromise on

labour for example bringing in ready peeled and cut potatoes instead of preparing from scratch however one can never compromise on food safety. Work load pressures due to shortage of staff or budgetary constraints are no excuse to give the freehand to anyone to take shortcuts on hygiene as the safety of the food may be compromised.

The thesis is a motivator to enhance my career goals (Creswell 2002). Doing research through having feedback from questionnaires distributed to individuals and employees engaged in the industry is the enjoyable part of my work, on the other hand collecting statistical information is a challenge (albeit the daunting part) as from the little experience I had already getting information from government entities requires a great deal of bureaucracy and permits. The questionnaires have been adapted with discussion boxes and I tried to minimise the agree and disagree captions and this has got much to do with the Delphi technique as the suggestions and queries I shall collect from these questionnaires will be a subject of debate between their response and the interviews I shall be doing with food hygiene regulatory stake holders (executives working alongside with the health department). I have tailor made questionnaires for the average consumer albeit the client demanding food service and the general work force of the industry including management.

The following is the list of open ended research questions that I need to delve into during the course of my studies. Such questions shall be conducted in the course of my interviews with relevant stake holders and questionnaires distributed amongst the average consumer apart from the workers in the related activity. Questions written on questionnaires are found in appendix 7, 8, 9 and 10 in pages 33 to page 39.

Now I shall indulge in looking for answers for the following questions

What kind of impact did the EU Legislation and local legislation leave on food borne illnesses?

What kind of impact has the improvement of hygiene requirements with primary producers and manufacturers leave on final consumable product?

In recent years in the EU there has been a series of abuse, food laundering and food fraud by major so called accredited companies like Silvercrest caught over the scandal of using cheap horsemeat as a replacement of beef in their beef burgers and Grosse and Blackwell who were convicted of allegedly using Sudan 3 as a food dye in their Worcester Sauce to mention but a few. How confident are food processors and final consumers on the food they are being provided?

Moreover how can The European Food Standards Agency and its Rapid Alert System maintain credibility after failure to address this abuse in a timely fashion?

Agri Tourism is a niche industry that attracts travellers who want to learn about a country traditional food being produced with old traditional methods yet this practice is exempt from any form of legislation including food hygiene regulations and the LN 173 2002 on traceability .Why are laws applied to all food sectors not applicable to this segment ?

How does the Eu Regulation 2073/2005 on microbiological criteria of food impact on the current challenges of modern trends apart from issues in modern farming techniques including the use of GM's, pesticides, fertilisers, growth hormones, antibiotics etc.?

How does or how can the tourism police be involved in issues that have to do with food safety when this corpse of police is established in the near future?

There is a number of conditions one has to adapt to be given a permit to open a new catering establishment and that is rightly so. But the existent long established catering establishments have been set without these restrictions. How does is the Food Safety Commission ensure that these are being compliant , in other words what kind of gap spotting is being done and how is it being rectified?

What kind of impact did the global warming leave on the way we have to treat with our food stuffs?

How readily responsive are the health authorities to the incidence of newly emerging disease that can be spread from food consumption?

1.2 The Structure of the Thesis

The outcome of this thesis is to establish a feasible workable plan as an answer to the open ended problems present due to the escalating number of catering establishments. The plan is essentially centred around the consumption of safe food that is being offered to our populace and the tourists. This thesis is research based and is divided into theoretical and empirical parts. The theoretical part demonstrates a clear definition of what is and what is expected out of Food Safety Management, then there is a clear overview of the most common diseases attributed due to the consumption of unsafe food. A SWOT analysis of the food industry follows in the empirical segment of the project sustained with the debate and professional opinion of the stakeholders and the general workforce.

2 The Theory Of Food Safety Management

In this chapter we are going to deal with the definition of what is Food Safety Management . Food safety has been a global subject of debate for centuries and now even more with the advent of increased demand of food service. Essentially there has to be clear identification of roles and responsibilities of the general work force involved from farm to fork.

2.1 The definition of Food Safety Management

According to the International (Standard ISO 22003, 2005), Food Safety Management is defined as a set of interrelated elements that establish policy and objectives. With the aim to achieve objectives some policies are used to direct and control the organization so that food safety is maintained.

These interactive elements are

- Good Practices/ PRPs
- Hazard Analysis /HACCP
- Management Element / System
- Statutory and regulatory requirements
- Communication

Catering is the business of providing food service at a remote site or a site such as a hotel, public house (pub), or other location. Catering has evolved to become an artisanal affair. Caterers now create an experience that involves the senses.

2.2 The roles and responsibilities

“Control and monitoring are integral parts of food safety management” (Sprenger 2012) . Food Safety Management is a mandatory function of the management in other words it has to provide the tools and resources to enable the operative to deal and produce food safely. The role of the individual operative to participate in FSM is also required by law so responsibility is not solely restricted to management however The European Union in its Regulation 852 2004 mentions the proprietor albeit the management due to the fact that staff turnover is high in the industry and cannot be relied on the general staff. The catering industry is considered as the one industry with the highest turnover of staff due to its requirement of the least qualifications and skill (Airey, 1978) and with this in mind it is not easy to entrust a

responsibility to catering staff who do not adhere to the organisation on a 100% level due to the fact that they do not have a sense of belonging let alone their sense of commitment.

The General Provisions paragraph 8 of The EU Regulation 852 2004 on hygiene of foodstuffs dictates

“ An integrated approach is necessary to ensure food safety from the place of primary production up to and including placing on the market or export. Every operator along the food chain should ensure that food safety is not compromised in a food business”

Essentially management has to

- Set the main objectives and standards
- Set up of systems for control of procedures and their monitoring and document control.
- Communicate clearly to the staff at all levels in addition to
- Training and motivation
- Ensure continuous supervision
- Analyse and interpret results.
- Provide the tools necessary and the human resources to cope with the fulfilment of the implementation of food safety management.

Commitment from the management is essential to construct a framework to the success of FSM . Incentives to the staff typically job security and incentive bonuses are amongst the commonest catalysts to adherence to the rules. Moreover it is essential to ensure that staff numbers are adequate and recruitment of the staff is made in a timely fashion, such a timing that ensures a proper induction and familiarity with the operation and sufficient to ensure that there is an adequate training. The reality shows us that the norm about the incidences of food poison happen due to lack of human resources leading to an over stretched staff . It is a fact that under normal circumstances the general rule is that the staff abide by the policies of good hygienic practices however the dilemma exists when staff are working under pressure , this may well lead to ignoring good hygienic practices. Supplies should only be bought from an approved suppliers list who adopt HACCP in their system. Unless expertise is sought within the organisation then it is imperative to bring in external consultancies and expertise , such as in the case of an HACCP system, cleaning methods, construction , use of equipment and pest control. Such expertise is considered to be a tool of defence in due diligence should a court or investigative issue arise.

3. Food Safety Policies

A food Safety Policy is a written strategic plan on the implementation of FSM. Before any initiation of a food business operation is the pre requisite program known as PRP's and this forms the basis of Food Safety Policy . PRP's have been first published in The Codex General Principles of Food Hygiene 1969 and Codex continued to review a further 17 publications since that time .In Canada it is a legal requirement that PRP presentation should be presented before the opening of any catering establishment.

3.1 The role of the Codex Alimentarius

The Codex Alimentarius Commission is an inter governmental body set up in 1962 and is based in Rome part financed by the World Health Organisation and The Food and Agricultural Administration of The United Nations , it has got 176 member states that include Malta. The committee is set up to give advice to member states and other(who retain the status of observers) on

- To protect the health of consumers
- To ensure fair practices in the food trade
- To coordinate food standards work internationally
- To finalise and publish international standards, codes of practice and recommendations in the Codex Alimentarius

Source FAO 2009

Although a lot of advisory contents of the European legislation have the blueprint of The Codex , standards set up by the committee are in actual fact codes of practice and not necessarily legal.

3.2 Food safety policies the way forward

During an interview which I had with Mr Clive Tonna Head Of The Malta Environmental Health Inspectorate on the 25th of July 2016, I discussed my concern about the tangibility of prerequisites in the smaller establishments and he ascertained me that in due course all catering establishments including the small and medium sized enterprises (SME's) will be updated on these requirements.

A Food Safety Policy should be a problem solver and should have a clear understanding of the food law, regulations, and standards (make use of Codex),

food safety control management with an ad hoc inspection services and laboratory services when required, continuous real time monitoring of controls of food safety, familiarity with current surveillance of food borne diseases and public information and a capacity for emergency response. Training and the sensitivity to ongoing training needs.

4. The Challenges Faced By The Local Industry

A scope and an inspiration to do this research is to uncover the true reality of how education and legislation have helped in the improvement of food safety to our populace especially the catering staff towards the local consumers and that of the tourists especially now at a time that the ambitious government strategy is triggered to reach the two millionth tourist by end of 2017. I am concerned about the fact that the running of catering establishments is by today's standards considered as multinational with workers coming from various backgrounds and I realise as a Food Hygiene Course provider accredited to award food handling course licenses in accordance to the EU Regulation 178/2001 that some of these expatriates do not have basic knowledge of hygiene as they are political asylums seeking refuge in my country as they actually come from impoverished war torn areas like , Somalia , Eritrea, Sudan , Nigeria, Ethiopia, Serbia , Croatia, Montenegro and Bulgaria who have grown up without the basic amenities, then they are offered unskilled odd jobs including cleaning jobs in kitchens as they can hardly communicate in English let alone teaching them the principles of good hygiene practice. In a survey conducted by Deloitte and Touche Malta in 2016 concluded that 60% of the catering establishments in Malta are unprofessionally run capping a minimum amount of profit and inadvertently effect the viability of those establishments which are professionally run. (Malta, 2016)

My research is supported with statistics that I have acquired from The Food Safety Commission, The Environmental Health Department and The Disease Surveillance Unit , National Statistics Office, EU Labour Force Survey amongst others together with questionnaires that I have distributed amongst employees and management of the various sectors of the industry and also the general consumers especially those who require specific diets namely the coeliacs and other populace that require special dietary requirements

The very results and the outcomes of my studies act as a barometer to discussion to see how we stand in comparison with our European counterparts . Such results should be of relevance for The Malta Food Safety Commission and to the academia of The Institute Of Tourism Studies.

5. Legislation

As already explained there has been a lot of legislation that has been going on and this very much thanks to the fact that we have joined the EU. Prior to our inclusion our The Food Safety Act of Malta has been outdated since 1948 , at a time when the Maltese where not acquainted to visiting restaurants as most families were poor especially during this post WW2 era and the investment in tourism only started in the 60's. The Food Safety Act has been revised in the year 2002 and has been very much in keeping with the situation of the time. In the meantime other catering facilities have been created other than restaurant services , namely cook chill systems for which now we have three major companies that deliver foods to airlines, hospitals, school canteens and retirement homes in the main, however very little has been amended if at all in this end. To be fair gaps in our legislation are actually being covered by the European Laws but these should be covered in a Maltese Interpretation of these Regulations for which most often than not are not. A case in point is European Regulation 1169 2012 on labelling and allergens which should have seen its full implementation by December 13th 2014, however the Maltese guidelines for this law have not been implemented up to the time of the writing of this thesis.

5.1 European legislation and HACCP

Food Safety Management is covered by the EU Directive 93/43 EC on Hygiene Of Food Stuffs and states that “food business operators shall identify any steps in their activities critical to ensuring food safety and ensure that adequate safety procedures are identified , implemented, maintained and reviewed” Later on EU Regulation 852/2004 has made HACCP mandatory to all food businesses from farm to fork as from the 1st of January 2006. In essence The HACCP system is the most highly respected Food Safety Management System which has been proven to effectively reduce food borne illnesses, it has been created in 1959 as part of NASA Space program conjoined with the American Army in Natick and The Pillsbury Dough Company to produce safe foods to astronauts, as one can imagine food safety is not an option when in outer space. HACCP stands for Hazard Analysis Critical Control Point and essentially what it does, it looks for the areas in the food chain were errors might occur, such errors or hazards which may compromise the safety of the final product unless control is applied, thence the Critical control point

and the critical control point monitoring is the measure to take to safeguard these hazards from occurring. All through the years the system started creeping into the manufacturing industries as it was acknowledged for its effectiveness and it was publicly launched in 1972 for the manufacture of frozen shellfish in the USA. Codex has been very instrumental with the intention to give member heads of governments advise on the production of safe food continued to give a boost by the inclusion of HACCP as part of their guidelines. In spite of the introduction of HACCP for now more than ten years I am still confident that an alarming rate of food business employees cannot define the acronym let alone abide by its implications.

6 The General Workforce

Tourism contributes to 40 % to our GDP both directly and indirectly. There are a total of 5169 registered catering establishments in Malta out of which only 3113 are functioning with the addition of another 323 operating with a temporary permit , this will tally 3436 (*source Food Safety Commission 2015*) employing a total of 5196 on full time basis and another 7043 on a part time basis as at October 2015 (*Source National Office of Statistics*). However it is very clear to assume that there is a vast majority of part timers who do not have their job declared as they either are registered as unemployed or simply to evade taxation or because they are expats without visa. There is a total of 112201 licensed food handlers although the figure incorporates the sectors of factories , grocery stores and street hawkers. Once again one must add that the fact that licensing is a governmental concern , those who work under cover either because they hold no visa or registered as unemployed have a reluctance to obtain a license in food handling for fear that they might expose their identity and in turn labour office or the emigration department might take action. This raises a major concern on a good proportion of the labour force who might not be adequately trained in food hygiene commensurate with their work activity.

7. Statistical Occurrence of Food Borne Illness In Malta

The general impression is that the incidence of food borne illnesses within the EU have been on the rise in these recent years, however let us try to be more optimistic without denying that this is factual at this stage, one must point out that the fact that nowadays isolated cases are generally reported for two main reasons. One being that the victim knows his rights for compensation and more importantly is the fact that medical practitioners are legally bound to report the incidence to the Disease Surveillance Unit whether it is a general outbreak or even merely an isolated case.

“Foodborne illnesses resulting from contaminated food and water remain a major public health problem world wide” (Mead et al, 2009) More often than not a food borne illness does not result from a single breach of hygiene , but from a sequence of predictably preventable errors (source KA Vella Maltese Medical Journal 1997) Such argument can be controversial as this can be the fault of abused raw material which could have been contaminated before receipt. Moreover supporting this argument there is the clause 41 of the Food Safety Act of 449 on Due Diligence Defence that states that it is a defence to prove that the incumbent has taken all the necessary precautions, and the fault pertaining in the commitment of food poisoning was due to the malpractice of the third person. Such due diligence defence is only appropriate just as long as the retailer or caterer have procured their food stuffs or raw material only from approved suppliers (EU reg 178 2002 on traceability)

The European Centre for Disease Prevention and Control (EDCE) has set up a facilitated two way communication between member states known as The European Surveillance System (TESSy) and now it encompasses a wider range of food borne illnesses. The system takes a proactive approach upon the detection of newly emerging diseases and diseases which can potentially brought in from third world countries. Travellers disease are not uncommon to Malta we had incidences of typhoid and paratyphoid brought in from India back in 2007.

On a local level HACCP and the adaptation of this food safety management in all catering establishments except for hotels is commended through the so called Flexi HACCP (Maltese legislation explained 2007) and there are no clear views of how this is to be implemented.

7.1 Sequence in an outbreak investigation

Figure 1 shows us a plan schematic of the sequence conducted which leads to analysis ,results and the conduct of investigation.

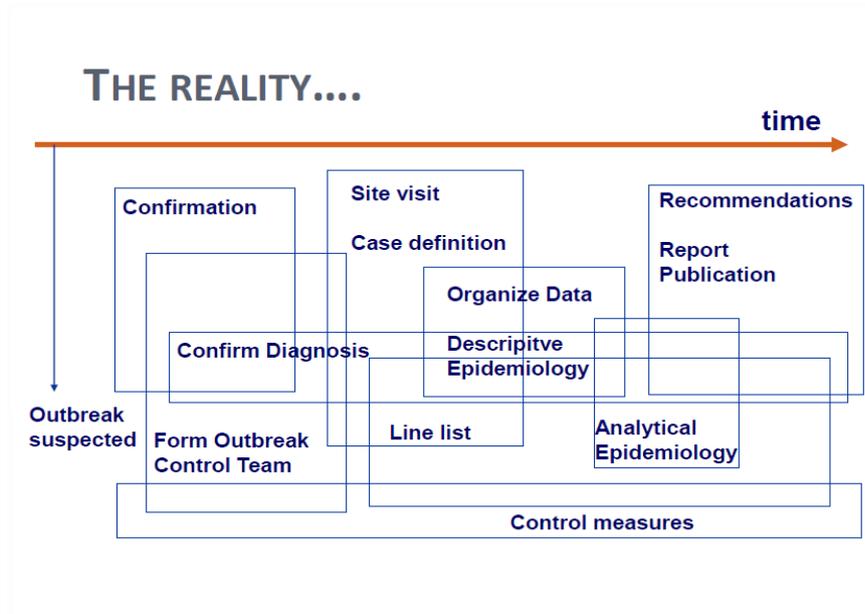


Figure 1 (Borg, 2016)

Confirm the existence of an outbreak or isolated case

- Collection of the initial information normally coming from the general practitioner linking the time and place

Confirm diagnoses

- Laboratory confirmation , serological results, and types of isolates and toxic agents. Once outbreak is confirmed immediate control measures are taken including exclusion, public warning and hygienic corrective measures. Further investigation follows to find out the causative agent and potential population at risk, the environmental and or veterinary health officers are engaged at this point

Define the case

- A criteria is set to decide if a person should be classified as suffering from the disease under investigation. Definition can be reviewed if new information becomes available.

Case findings

- Contact the organisers of the event who in turn should provide further details of the menu and use all communication means to seek potential customers involved.
Develop Hypothesis and analytical studies.
- Cohort study of the people at risk and further analytical risk factors connected with the individual food items.
Perform further studies both microbiological and environmental
- Microbiological investigation of the staff ,and potentially implicated high risk foods included in the meal.
Communicate results
- Outbreak report and its publication. Update of the sequence of the investigation in a full report document. These are needed for any legal proceedings that will ensue.
Implement control measures.
- Recommendations to avoid recurrence in the future which includes training in food hygiene.

7.2 Incidence of food poisoning and their cause.

What follows is a study of various tangible reviews from journals , reports , statistical data and legislation

Campylobacteriosis

Campylobacter is the most common cause of gastro enteritis in Malta and has prevailed over Salmonella all through Europe in these last 15 years. Symptoms include headache, nausea, diarrhea and vomiting. The principle reservoir of Campylobacter is the gut of farmed animals including poultry , bovines ,caprines and pigs and can also be found in the snouts and beaks of domesticated pets (Communicable Disease Control Strategy for Malta 2013 Charmaine Gauci et Al) . It has got a very low infective dose and is rarely transmitted from man to man and the onset period is 2-11 days. Duration of illness-usually no longer than 10 days but can cause complications and extended illness in some patients, the majority of cases require hospital treatment . Lack of hygiene during family outdoor barbeques has been the renowned as the main consequence albeit nicknamed as the BBQ bug . However with a 12 % contribution of the bug coming from catering establishments this raises some concern in FSM, chicken has always been dealt with thorough cooking for fear of salmonella however renowned chefs argue about the degree of cooking duck breast and pigeon breast which are also sources of campylobacter. Thorough cooking of such commodities will render the final product

somewhat dry ,tough and unpalatable however this does not justify the risk of food poisoning. (source food Standards Agency UK 2016). In spite of all this the law does not interfere on how food is made and prepared, it leaves it up to the proprietor of the food business to identify the hazards and control accordingly.(ref Food Safety Act 2002)

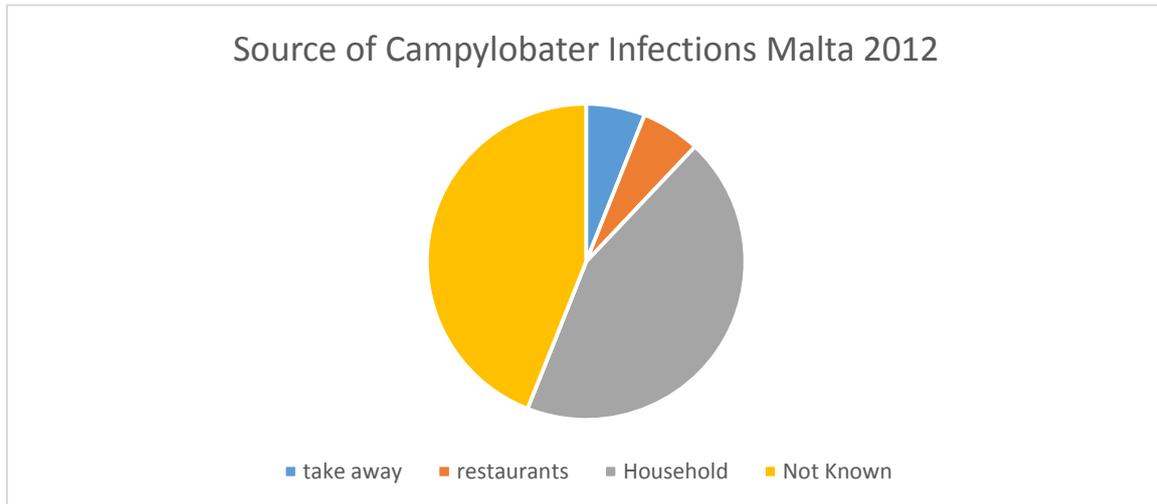
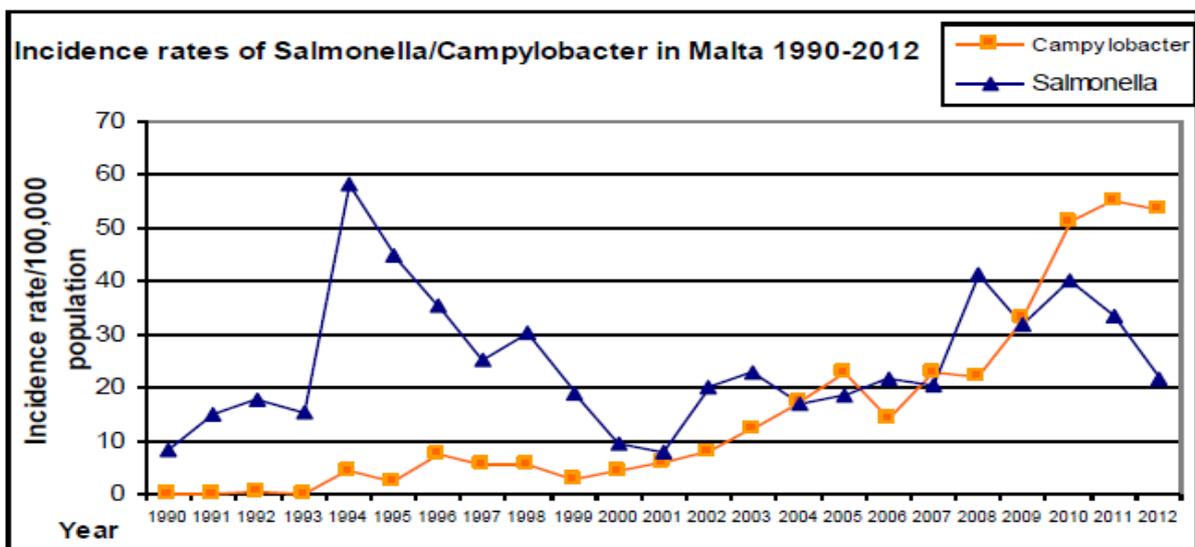


Figure 2

The graphic appendix 3 demonstrates the alarming escalation of Campylobacter in comparison to the downward trend Salmonella incidences in Malta (source Communicable Disease Control Strategy For Malta 2013) However as one has to compare the incidences of campylobacteriosis with European counterparts our statistics are considered as a minor change (Source ECDC)



Source ECDC 2012

Salmonella

Non –typhoidal Salmonella has always been a major cause of concern in the European Community until the year 2006 and out of the 2500 different serotypes the most common implicated are S. Enteritidis (40%) and S. Typhimurium (30%) . Malta has always been in the forefront of such notification(ECDC surveillance report 2010-2012) As seen in the chart there has been a decline in reported cases since 1994. The rate is 25 cases cases per 100,000 populace in a span of these last 25 years (IDCU 2013)

The organisms multiply in the intestines and there should be large numbers to cause an illness. The bug is killed at 55 ° and such temperature is required for the pasteurization of eggs. With an onset period of between 1 and 3 days and a vegetative growth at between 7° and 45° the duration of the illness normally lasts between 1 and 7 days. According to ECDC symptoms are normally considered as mild however it can have very serious implications amongst the very young, the very old and the immuno compromised that also includes death. Implicated vehicles of contamination are feaces of infected carriers , animals and poultry and undercooking , unpasteurized eggs (although contacting Salmonella from fresh eggs in Malta is very slim as thanks to the size egg supplies are consumed within 21 days from laying . (Source Sprenger 2011) and milk and inappropriate agricultural practice.

The incidence of Salmonella in Malta has declined and this is contributed to controlled based legislation namely improved strict hygienic husbandry and agricultural practice and better education in hygienic practices both with caterers and on a domestic level (however there has been a major concern at this end as 24% of the cases are effecting infants below the age of 5)

Listeriosis

This is an infection caused from the bacterium *Listeria Monocytogenes*. This form of illness is considered as rare in Malta (as in European counterparts) however it may result into life-threatening symptoms, primarily in elderly people , the immuno suppressed, pregnant women and new born babies typically resulting into still birth , abortion and meningitis and potential death(case fatalities 15-30%), for this reason The ECDC maintains continuous surveillance . For the remaining healthy populace it is manifested in mild febrile illness or mild diarrhoea. The low incidences of Listeria in Malta can be attributed thanks to the fact that by law milk is only sold in a pasteurised form however soft local goats cheese is prepared only from raw milk and this can be implicated. Also another contribution adding to the likelihood of

contracting *Listeria* is the fact that the island is considered as hot climated and the tenure of maintaining fridges and cold rooms at a temperature of less than 5° in hot busy kitchens during a summer day is difficult and *Listeria* is considered as psychrophilic and can grow as low as 4° (IDCU 2013) . However as part of the proactive approach taken by gynaecologists they responsibly advise their clients to refrain from eating soft ripened cheeses like feta , brie, Camembert, blue veined or queso blanco, pattees and cold foods and small eats which are assumed that they have been manipulated and temperature abused.

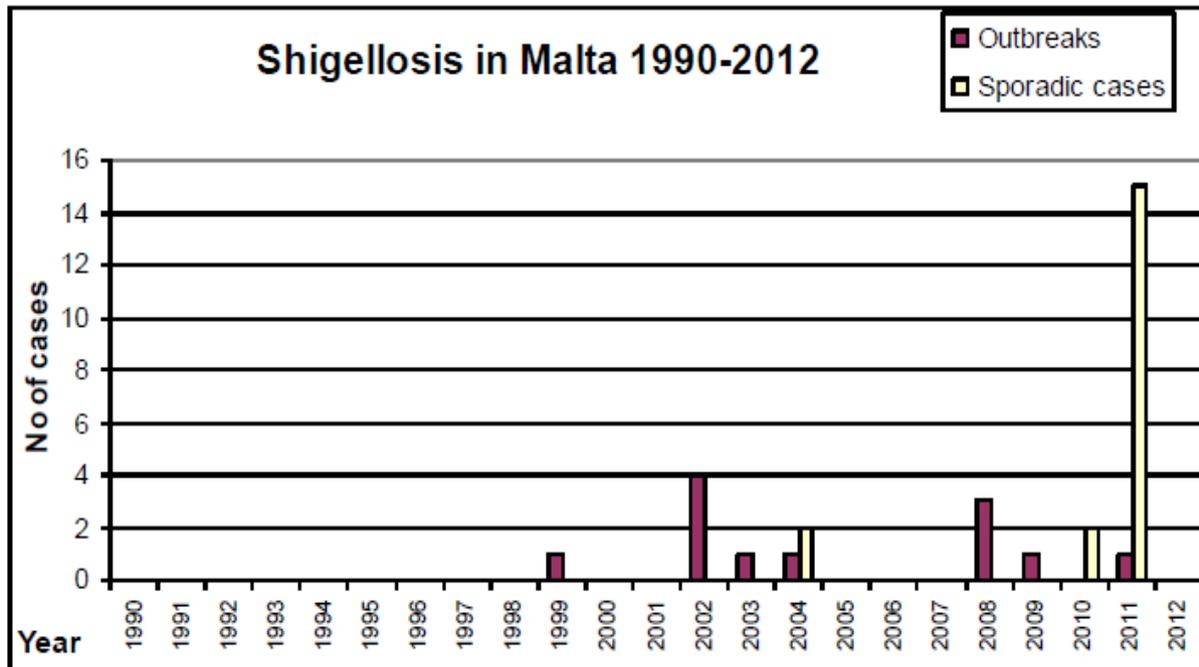
Bacillus Cereus

Outbreaks of this food poison have mainly been attributed to rice as the initial source of the toxic infection is the swamps or the soil however other foods have been implicated ,namely pasta, spices, potatoes, cornflour , vanilla slices and custards (Richard Sprenger 2012) An outbreak effecting more than 92 residents in a Hotel in Malta happened in 1996 the food implicated was rice (KA Vella) . The main reason for *Bacillus Cereus* is inadequate cooling and inadequate reheating of the food vehicles mentioned above besides the fact that foods are being laid at ambient temperatures for too long a period. Abuse associated with this illness is normally due to the inadequate reheated and re reheating of the traditional Ross il Forn (the Maltese style baked rice dish or the rice and pumpkin pie synonymous with the Gozitans)

Shigella

Shigellosis is an intestinal pathogen that is transmitted through the faecal oral route and has been under the surveillance of the ECDC as from 2008. A single outbreak in an institution in Spain effected 112 persons . the symptoms are mainly severe bloody diarrhoea ,dehydration and a bad effect on children who can actually contract kidney failure. (source ECDC 2010-12). Shigellosis in Malta is considered as rather uncommon (Source Communicable disease Control Strategy In Malta) But this does not raise a green flag for no concern. The cause of *Shigella* or dysentery is linked to poor hygiene standards in the preparation of uncooked foods that include salads , however it can also be linked with bad agricultural practices which provide vegetables and fruit to caterers. 75% of our vegetable produce is home grown , and more than half of the produce is sold from street hawkers who are considered as unapproved suppliers (in other words their product is considered to be non traceable and not accounted for by the veterinary authorities) . Irrigation using drainage water is no news in a country which has a minimal amount of rain

water to conserve and abuse of this type has made headlines in the past. It is a very common practice by hawkers who actually sell their product directly to restaurants , an illegitimate practice that can lead to some devastating effects. The graphic below demonstrates an upward trend of dysentery in 2011 (source ICDC 3013)



Source ICDC Mata 2013

Botulism

There is no data available regarding the incidence of botulism in Malta and there are no reported cases during these last 15 years from my findings, (it could be that incidences remained unrecorded) however this does not mean that the potential risk does not exist. Clostridium Botulinum is a strict anaerobic bacteria which can produce a neuro toxin and such as the name implies it directly effects the nervous system which results in the dilation of the eyes , paralysis of vital organs and may lead to death if not treated with urgency (source Wikipedia) Potential foods implicated in Maltese industrial kitchens are:

Canned food: bulging or dented cans which have slipped the watchful eyes of food operators or their ignorance ,who may have used them anyway for a lesser cost.

Vacuum packed food: The non identification of potential hazards in processed vacuum packs that have lost their integrity, meaning that the product is inflated rather than vacuumed.

Sous vide packaging : Malpractices in the production of sous vide foods.

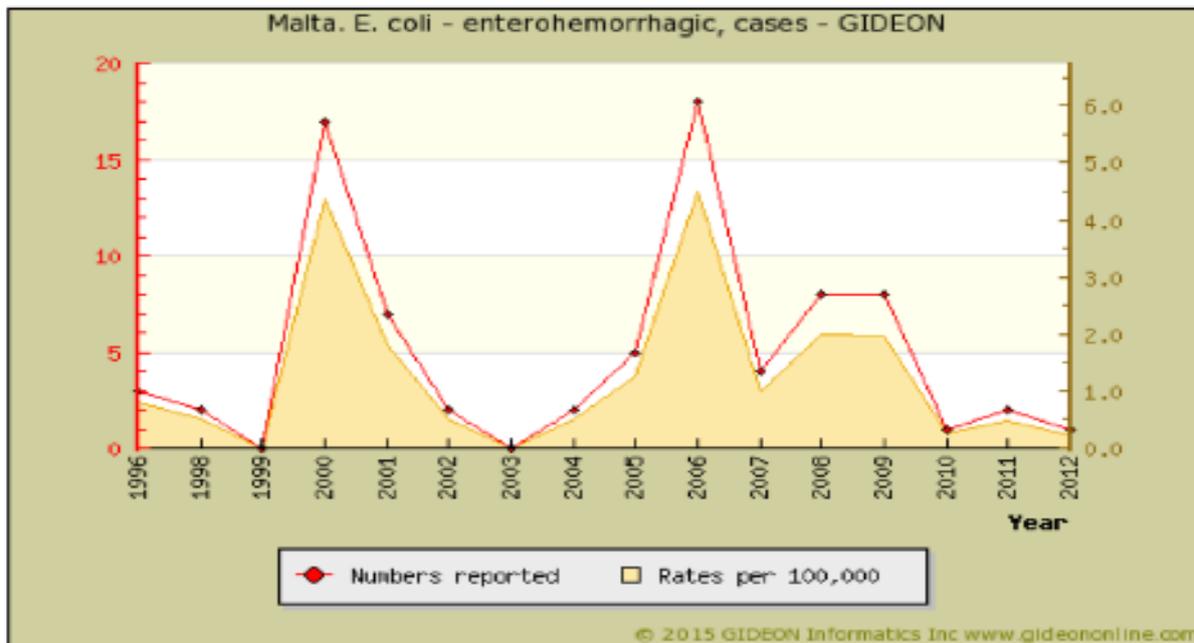
From my own experience there is not enough education albeit awareness about the potential risks in the practice of sous vide, such unawareness is due to the fact the sous vide has taken on to Malta by storm and restaurateurs are only seeing the full benefit of such practice and no information has been passed on to the operators.

Preservation : Another area of concern in malpractice in restaurant kitchens. In shoulder periods when kitchens are not busy rightly so some preparations are made in advance to fill up the stop gap and these include the production of long term preserved foods. Low acid pickled foods need a low Ph for their conservation and the main item of concern is oil infused garlic and in the majority of cases this commodity is peeled crushed and conserved in oil without being cooked. Botulinum spores may originate from the soil and raw garlic in oil may create the ideal condition for cl. Botulinum outgrowth of these spores and produce toxins.

Fish. The gut of the fish is the place where Cl.Botulinum type B can be found. Given that the Maltese fishermen still practice traditional methods of fishing fish is not gutted upon captivity and as such can also contribute to the likelihood of traces of botulism in the flesh. The scare is compounded by the fact that nowadays restaurants serve raw fish interpretations on their menu

E.Coli

The human gut is a common vector of Escherichia Coli and incidence is the result of bad personal hygiene especially hand washing after using the toilet, the results of which are normally treated without hospitalisation. However the E.Coli that one has to be highly concerned about is the one derived from the gut of the cow that can produce a vero cytotoxin albeit EColi 0157. This time the more persistent symptoms vary from watery diarrhea, nausea and abdominal pain (HUS) to bright red bloody diarrhoea and severe abdominal cramps (colitis) which may lead to death . There is an onset period from one to fourteen days and has a low infective dose <100 bacteria. Apart undercooked beef products , other foods have been implicated including raw milk, cheese made from unpasteurized milk, and unpasteurized apple juice.



Source Gideon 2013

Noro Virus

Noro virus has been first detected in Norwalk Ohio in the US where it has stricken hundreds of school children in an elementary school in 1968. Now it is considered as the second major cause of gastroenteritis in the US and in Europe. A major outbreak of Noro Virus happened in New Year's Eve 2006/2007 implicating 2 major hotels and two restaurants and to a minor degree households, causative agent contaminated oysters imported from France (Brittany) which were being served raw (source The Times of Malta 2nd January 2017). After this incident on the following January I was invited to a seminar organised by The Food Safety Commission ,chaired by the chief of the inspectorate Mr John Attard Kingswell and my question was why are oysters and shellfish allowed to be served raw when the incidences of foodborne illnesses related to raw seafood is so high? The answer was that The Commission does not interfere on how the food is dealt with but rather it is the responsibility of the operator to identify the hazards and apply the necessary controls for their prevention. This argument is null as although it is quoted from the Food Safety Act it acts against the very principles of HACCP as this is an obvious identification of a critical control point for which the measures to control are not being taken. Noro virus is a problem to say the least other illnesses related to the

consumption of raw shellfish are Hepatitis A, Paralytic shellfish poisoning, amnesic shellfish poisoning to mention but a few.

As a virus it has a very low infective dose and the aerosol effect coming from projectile vomiting can easily be passed from man to man. Noro virus also known as The Small Structured Virus SRSV can have an epidemiological effect in closed communities including hotels and restaurants and is communicated even by hand shake or the touching of a door knob and for this reason food handlers are recommended to wash their hands frequently even for their own well being as the virus is added to the list of communicable disease. The recommendation

Tricinella Spiralis (trichinellosis)

Tricinella Spiralis Lives in the intestines of mammals . Disease is spread through undercooked infected meat –especially pork and wild boar . Symptoms include nausea, diarrhea, vomiting, fatigue, fever, and abdominal discomfort , later than that as the worms encyst in different parts of the body, other symptoms occur such as headaches, fevers, chills, cough, eye swelling, aching joints and muscle pains, pinpoint hemorrhages, itchy skin, and heightened numbers of white blood cells. In the very extreme cases If worms penetrate the nervous tissue, they cannot survive however patients may experience difficulty coordinating movements and this leads respiratory paralysis and in severe cases, death may occur. A heart infection can also cause death.

Within Europe the number of reported human trichinellosis has increased by 12.3% in 2012 as compared to 2011 but the trend in Malta remains very low due to the fact that we are generally not consumers of pigs being raised at the backyards and we never go hunt and eat wild boar (EU summary report on zoonoses, zoonotic agents and food borne outbreaks 2012) so the practice is not indigenous to us and it is a legal requirement that all the herds are checked by the veterinary department and no slaughter can be practiced outside the abattoir and besides it has to be noted that blood samples are taken from each of the individual 2500 pigs that are being slaughtered per week which are tested against trichinella. In the face of today's current situation I must say that the vast majority of pork consumption is provided locally and imported livestock are being vetted , through the regulation of The EU 178/2002 for their traceability.

It is in the best interest that in food safety management to identify the the approved suppliers as part of its pre requisite program.

Giardiasis

Giardia Lamblia is a protozoa albeit a parasite is considered as a common water borne illness in the US (source Centers for Disease Control and Prevention). In Maltese catering establishments thanks to adequate guaranteed treatment in water supplies we receive very rare sporadic cases (communicable disease survey 2013) , however there is still some kind of isolated abuse where restaurants use well water without adequate treatment. Well water is not ideal for consumption.

The Q Fever

The Q fever refers to the incidence of the bacterium *Coxiella burnettii* which has been in its height in Europe in 2011. The Maltese government has taken a prompt corrective action in its first signs way in May 2013 when it effected one goats farm in Qormi in 2013. The problem diminished thanks to the fact that the Maltese government imposed a six-month ban on the transfer of cattle between farms. Goats, sheep and bovines were not allowed in any show and not even the annual Maltese Feast of Mnarja in order to contain the spread. Thanks to all this initiative there has never been any incidence of such disease in humans within our shores let alone the catering establishments. The likelihood that humans contract the fever is very slim however it is manifested in a lengthy flulike illness (Source government report on The Times of Malta May 7th 2013)

Brucellosis

Brucellosis otherwise known as the undulant fever or as nicknamed Malta fever is an infectious disease caused by the *Brucella* bacteria The disease is transmitted either through contaminated or untreated milk (and its derivatives) or through direct contact with infected animals, which may include dogs, pigs, camels and ruminants, primarily sheep, goats, cattle. This also includes contact with their carcasses. The onset period of brucellosis is, usually, of one to three weeks, but some rare instances may take several months to surface. However originally originating in Malta tense the term *Brucella Melitensis* it is now considered as non endemic and until the year 2013 the last reported case has been reported in 1998 and in 1995 alone 225 persons have been affected by this infective bacteria. Ironically the same cannot be said about the Mediterranean counterparts , such as Greece , Italy and Spain as it is common in caprines and bovines (EFSA 2013) Very stringent controls are being largely manifested by the veterinary department in farms

nowadays and all milk producing bovines and caprines are tagged , besides the fact that the Maltese government has passed a law way back in 1975 that dictates that all dairy producers have to pasteurize their milk before the point of selling (Source Communicable Disease Control Strategy For Malta 2013) In the essence I find this report somewhat biased as it claims that the risk of the re-emergence of human brucellosis is relatively slim and I stand to conclude that its minimal possibility of its reemergence is not forthcoming from imported meat as the report claims but from abuses that in actual fact happen locally. In Malta there are still herds that are not declared, in 2013 there was a particular herd in Gozo that was found to be non declared and although the farmer was prosecuted this kind of abuse can still be inherited by other domestic farmers. In the true reality over the wall buying is still a common practice and milking and preparation of goat cheese still remains as a common practice in some Maltese cultures and such practice follows that the final product can end up on plates as appetizers in local wine bars. The bigger picture that is the large organizations do not abuse and they adopt purchasing as part of their HACCP system , but the SME's tend to ignore such procedures.

Yersinia Entercolitica

Yersinia is a harmful bacteria that can cause an acute intestinal illness in young children and mesenteric adenitis and ileitis pseudo appendicitis in the older ones and adults. A minority of the victims experience a red bloody diarrhoea. The pathogen will acutely effect people with an overt iron deficiency and the immune compromised. In accordance to the Fishery Technology Report on Asian Fisheries (Pankaj Kishore Et Al 2012) Yersinia Entercolitica is in the majority related to fin fish and shellfish and their non conformance to adequately store and display such fish at the appropriate temperature and on a general note it has historically been related to fish and shellfish world wide, however in accordance to The Maltese statistical report (Communicable Disease Control Strategy For Malta 2013) the bug has been isolated from pork as the main reservoir . These findings can be justified in respect to the fact that the Maltese eat a lot of pork meat and less fish (2500 pigs slaughtered per week for a population of 400000) apart from the fact that traditionally the Maltese consume a lot of uncooked Maltese sausage predominantly made from pork scrap fats and meat. The rest of Europe remains consistent with the Maltese statistics. In Food Safety Management this can be safeguarded as part of the identification of the potential hazard and thereby should be integrated as part of the HACCP control system and its determination of a process that should ensure

that it is perceived as a Critical Control Point and thereby adequate thorough cooking temperatures should be applied accordingly. But apart from all this there is a general abuse in Malta from the part of fish restaurants who actually purchase their fish from hawkers who are not considered as approved suppliers and more than that they do not apply proper chilling temperatures for their selling stock.

Scombroid Food Poisoning

Scombrototoxic or the histamine convertant foodborne illness as notified to the Infectious Disease Prevention and Control Unit is considered as uncommon (Communicable Disease Control Strategy For Malta 2013), however this stance stands to be corrected. Medical doctors symptomizing patients with the problem tend to not report the case as normally inacute illnesses that are dealt with privately are not generally reported (Eurosurveillance , Volume 12, issue 11 1st November 2007) . This is true due to the fact that normally scombrototoxic food poisoning is generally mild thereby underreported. Scombroid food poisoning is brought about by the ingestion of fish with high histamine content, ironically the Maltese favourite fish are Lampuki (dolphin fish) , tuna and Salmon which are all scombroids and the histamine issue is on their hyde (M Balzan 1990) The histadine is converted into histamine is caused by the dense population of the bacteria species , Klebsiella SPP, Morganella SPP and Hafnia SPP (R Sprenger 2012) The toxin of the bacteria survives even the canning processes of tuna and sardines and readily alert to multiply in the ideal conditions. The symptoms are a hot peppery sensation in the tongue followed by hot flushes and swells in the tonsils which can lead to a rare bronchospasm and difficulty in breathing, normally symptoms are treated without the need for hospital admissions and recovery comes within four hours within the first signs of illness. In Malta given the high temperatures we experience in the summer months, three tourists have fallen victims of this red neck syndrome in August 2015 after the consumption of a snack known as *Hobża biż żejt* (Maltese bread filled with tuna , tomatoes and olive oil) from a kiosk which would have been at ambient temperatures for more than the permissable limit , report was immediately passed to the IDCU from the general practitioner and the place was closed for further investigations. All 5 members of a family from Żejtun have contracted Scombrototoxic Food Poisoning after cooking and eating lampuki procured from a street hawker in Marsa Xlokk (M Balzan 1990) . This brings us down to the fact that small sole traders and other SME's do not adopt a proactive approach towards food safety Management.

8. The Empirical part

This chapter deals with the main objective of my thesis. In my qualitative research I have at this point in time tailor-made questionnaires to employees, professional stake holders working in the field and the general public and the results of their lack of knowledge and perception is alarming. This stage of my study is intended to analyse the state of affairs as they currently are and draw up my recommendations. Throughout my research so far within the European Community there are a top ten factors leading to the incidence of food poisoning and food borne illnesses being:

- Lack of planning and human resources to cope with the influx of work.
- Preparation too far in advance
- Storage at ambient temperature
- Lack of temperature control in food preparation areas , Maltese restaurant kitchens are small and cumbersome with little ventilation compounding to our hot summer weather.
- Inadequate cooling
- Absence of blast chillers while food is being prepared in advance exceeding the cooling time limit of 90 minutes.
- Inadequate reheating
- Ignorance about the rule to reheat food up to 75°C in the shortest period of time.
- Contaminated processed food
- Buying supplies from unapproved/ questionable sources
- Undercooking
- lack of the use of a probe to check core temperatures. Ignorance of identification of core temperatures
- Contaminated canned food
- Buying supplies from unapproved/ questionable sources
- Inadequate thawing
- Improper technique of defrosting , absence of a defrosting cabinet
- Cross contamination. Due to limited spaces in food preparation areas creating a situation where somehow raw food contaminates ready to eat food either directly or indirectly through bad hygienic practices that include the use of dirty cloths, dirty hands and contaminated chopping boards, inadequately cleaned machines and equipment and the lack of infrastructure
- Raw food consumed

- The malpractices and ignorance about the risk in selling foods in their raw state for example raw Maltese sausages and reluctance of adequate cooking of unpasteurised Goats cheese and the consumption of raw shellfish.

Source of factors (Sprenger 2012)

However the question is what leads to the above on our local level

Lack of knowledge and training and lack of HACCP

Inadequate scientific and technical resources for food inspection and compliance

Large proportion of the staff being employed only on seasonal basis

The lack of motivation due to underpaid employees (the average hourly rate is €5)

Lack of communication. Some expatriates can hardly communicate in English.

Subordinate staff are not being given clear instructions or cannot understand the language and cannot read, some eastern cultures feel embarrassed to ask for re explanation.

Overstretched work due to lack of staff caused by the fact that there is a lack of labour market to meet up the demand, thereby making do with a predominantly unskilled labour force who have to cope with multi tasks.

A shrewd like attitude from the management to invest in their people

Lack of training, a strange perception that there is no point in training the staff when managers know that employment in industry is highly temporary especially those employed on part time basis.

A shrewd like attitude from the management to invest in good hygiene products and practices

Lack of financial resources

Lack of government and local authority support especially to SME's. Even sponsorships in training namely cleaning skills and food hygiene given by the European Union seem to be highly favourable to large organisations who employ large number of employees and not to the ones that require the most including the small and medium sized who in their majority employ less than 5 employees. Most of the times these employers have to fork out the payment for such training.

Absence of a national food control strategy ,poorly defined and overlapping mandates among agencies involved.

Lack of control based legislation. The number of environmental health officers is not sufficient to cope with the current influx of the establishments.

Unclear food laws and regulations and the lack of synergy in their interpretations.

Limited infrastructure, equipment and supplies

Lack of amenities

The above will help me as a guide and a tool towards my studies and I shall fragment and elaborate into the individual sections and draw up my solutions and conclusions accordingly.

9. Surveys

9.1 The questionnaires adopted for the catering business employees

There has been 53 respondents to questionnaires predominantly hotel business employees and I have categorized into two segments, the management which I shall retain as a model and the general staff. The questionnaire on the above is appendix 1 on page 36 and 37. Under the seventeen respondents who either hold a managerial or supervisory position only one responded that there hasn't been any improvement in food hygiene during these last twenty years. From the response received I clearly get the impression that generally this managerial segment holds a good command on food safety responsibilities and everyone claims that he's got good knowledge of HACCP (Hazard Analysis Critical Control Point) with one respondent claiming that he has got excellent knowledge. However three of the respondents claim that they do not adopt HACCP in their food safety Management in spite of the legal implications and no food safety policy. Only seven respondents claim that they have a full HACCP implementation in their business which includes a Food Hygiene Policy and a fully trained identifiable HACCP team. Seven respondents claim that they do not have a HACCP team. A good eleven respondents believe in house informal training in food hygiene apart from the formal course in accordance to the LN178 2001 that states that people who work in the food industry need to be trained in food hygiene commensurate with their work activity. As expected the general feeling (13 respondents) feel that The HACCP system is too bureaucratic however 14 of the responses admit that it effectively prevents food poison, increases customer confidence, reduces the number of complaints, is complimentary to the legal requirements and most of all it works out well as a tool in due diligence defence in other words should there be a court case issue in the eventuality of food poison, HACCP if correctly implemented can give proof that the incidence could have easily happened due to the incompetence of a third party, potentially the manufacturer or the supplier. All respondents stated that records of monitoring are being kept and documented. Generally the business (with one exception only) is considered as supportive towards the implementation of food safety procedures.

Out of the remainder 32 general staff which in the majority are chefs 6 responded that there has been no improvement in hygiene in this country. For the question on

the level of knowledge on the understanding the responsibilities and how to improve them 14 decided not to reply to this question and I take it that they do not feel that they should be, the remainder 18 showed a good understanding and responsibility. Four out of 32 responded that their level of understanding HACCP is poor while another seven said their knowledge is fairly good and the remaining 21 have a good command and one answer was that his level of understanding is excellent. Only ten out of 32 said that they have a food hygiene policy and are in possession of an HACCP manual however all the respondents feel that HACCP prevents the likelihood of a food poisoning from occurring. In spite of these non-plausible results all these staff find the management supportive or very supportive in procedures in the implementation of food safety. This may sound contradictory as only 13 know that HACCP monitoring records of critical control points are being kept and documented.

9.2The questionnaire adopted for local people who frequent restaurants

All 31 participants in this sector responded that there has been an improvement in food hygiene in during these last 20 years. The questionnaire on the above is appendix 3 on page 40. Unanimously they believe that there has been very good education on the part of employees and management . Ten participants stated that there is a good base control legislation and believe that the increase of inspections has left its mark. 15 of the total respondents are not sure about the level of hygiene at the restaurants they frequent, and this brings me back to the idea that there should be scores on doors as instigated five years ago , an idea that unfortunately never materialised, most of the restaurants are closed kitchens in Malta. Another three respondents are not confident about the level of hygiene of expats and another two commented about the front liners as not adequately groomed to present the food, one comment was about waiters crossing the street with plates in their hands exposing such food to the outside environment and pollution. I have tried my best to ensure that the sample selected to do the questionnaire are not hospitality industry employees thereby being biased by their own experiences. At this point it is fair to conclude that all in all there seems to exist an element of trust between producer and consumer.

9.3The questionnaire adopted for Coeliac and gluten free diets

The questionnaire on the above is appendix 4 on page 41. There has been a distribution of 30 questionnaires to people who are either following a gluten free diet or they are coeliacs, all out of which state that the spread of coeliac disease is growing, currently standing as 1% of the population and out of all these respondents 18 say that they are satisfied with government support and policies. 10 out of 30 say that they are very confident about the European policies regarding food intolerances, three respondents said that the contents of the regulations are good but there is no full implementation, another four say that they are not confident at all, another three did not comment and the last nine claim that there has been no particular improvement. Generally the respondents with the exception of two feel that they are confident about the food that they buy from retail outlets. Ironically the same cannot be said about the food that these customers buy from the catering outlets and only two out of thirty are not sceptical about this, a third respondent claims that it is a struggle to make it clear to the chef to define the ingredients in the food he's just about to eat when it is a right to the customer to be informed about the ingredients present, this in accordance to European Regulation LN 1169. This brings us to conclude that there has been a very good input from Health Promotions, The Malta Consumers and Competition Affairs Authority MCCA and the government about the provisions coming from grocery stores and supermarkets but the same kind of awareness is not being owned from catering outlets and consultation is considered as low.

10. How can food safety regulations be respected in catering establishments in Malta? A Discussion

My conclusions in this area are supported with the results of interviews I have done with long established employed Environmental Health Officers and other experts. All in all there has been a general improvements and respect towards legislation. Industry guides should help for a better compliance in the future and there has been mentioned the input that can be given from the part of the Malta and Gozo Tourism Authority, The Malta Hotel and Restaurants Association the MHRA, The Malta Competition and Consumer Affairs Authority the MCCA, The Malta Meat Sellers Association MSE, The General Retailers and Traders Union (GRTU) and The Environmental Health Department without any conflict towards some form of political agenda, just like as the case that happened in the past when fresh milk was being distributed and left at the closed doorstep of restaurants for hours on end without refrigeration, all this with the blessing and support of the GRTU. The Environmental Health Department and the Disease Surveillance Unit should return back as one department as in the past as it was more feasible to carry out investigations in a timely fashion. There has to be more legal enforcement although I do not put the doubt the efforts made by the EHO's but there again these are understaffed surely and they should double there workforce currently standing at 30 enforcement officers.

Hiccups do exist especially amongst the small and medium sized enterprises SME's, however this is all due to the lack of support from the central government and the local authorities. The general opinion with respect to food safety we are within the average mean as compared to the other European counterparts and as with HACCP we are bottom line. Having said that, in view that we do not have common factors to compare since the risk grading done by officials is different from one country to another it is very difficult to make comparisons, hence the general opinion given above is based on a personal impression. The Environmental Health Directorate should have a more educational role in developing guides, templates and help in HACCP , more focus on HACCP and due diligence and less on risk assessment should be enforced moreover awareness campaigns are lacking or

only limited to a few a year for example the food safety week only held once a year , the compulsory food hygiene courses LN 178 2001 should be revised and standardised with all providers there should also be a larger pool of educative officers on a local authority level to cope with the influx of establishments. Only when all the above is rectified can the EHD exploit better enforcement.

CCP for potential hazards associated with process steps: Product: Date:

Process Step	Hazard & source/cause	Control Measure	CCP no.	Target Value	Critical Limit	Monitoring			Corrective Action		
						F	R	D	Method	R	D

HACCP Control Chart

Key: R = Responsible person F = Frequency D = Document

A HACCP control chart as suggested by the EHD

As to the question whether or not the implications of European Regulations 852/2004 and regulation 1169 are clear to the stakeholders the response was not on the affirmative, infact with regards to 1169 on allergens and labelling to date Malta has not published a local regulation. Regulation 852/2004 on Food Safety management amongst SME's is still a far cry from the true reality of being adopted. There should be more frequent inspections and more guidelines to the coerciveness of the system moreover there are so called unqualified HACCP consultants who are introducing Food Safety management literally cut and paste from books, the future in accordance to Mr Clive Tonna (Head Inspector) is government support on a local authority level. The law has to be clear cut at the outset of its introduction as a European Regulation that way avoiding misinterpretation of its implications without hypothetic conclusions as this results in confusing judgements.

Waste management is another issue that has been raised in my interviews and is considered as a problem especially in a hot climated country like ours. There is no policy in this regard, as a general rule waste is generally being dumped in backyards of restaurants waiting until over the weekend for its collection. One particular opinion in this regard and one that I do agree with is that in actual fact waste collection contracted by operators and that collected by local councils is adequate the difficulty only lies amongst the restauranteers who should improve on better waste disposal.

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All references have been depicted using APA sixth edition and for this reason there is no referral to page numbers.

Appendix 1

Questionnaire adapted for general catering EMPLOYEES

Please do not write your name on the questionnaire and all information collected will remain strictly confidential

Date _____

What is your position within your organization?

- Manager with the responsibility of food safety
- Supervisor. Head Chef, Sous Chef, Restaurant Supervisor, chief steward
- Operative. Chef, food server, steward, room service

Do you see an improvement in food hygiene in this country during these last 20 years

Yes No

What do you understand to be your main food safety responsibilities and how can you

Improve them?

How do you rate your level of understanding HACCP?

excellent	good	fair	poor	very poor
-----------	------	------	------	-----------

Do you have a written food hygiene policy or an HACCP manual?

Yes No

Do you have an HACCP team ?

Yes No

If yes can these be identifiable?

Yes No

Do you have any informal training in food hygiene apart from the 5 yearly food handling course?

Yes No

How do you perceive the benefits of a food safety management system in your establishment?

It is a waste of time and resources including unnecessary bureaucracy	
It effectively prevents food poisoning	
It's a defense of due diligence	
It increases customer confidence in our product	
Reduces the number of complaints	
It complies with legislation	

Generally how supportive or unsupportive is your business regarding the implementation of food safety procedures?

very supportive	supportive	not supportive
-----------------	------------	----------------

Do you keep records of your monitoring data?

yes	We do not monitor	Don't know/ Not sure
-----	-------------------	----------------------

Thank you for taking the time to fill up this questionnaire

Appendix 2

Questionnaire adapted for hotel BUSINESS EMPLOYEES

Please do not write your name on the questionnaire and all information collected will remain strictly confidential

Date _____

What is your position within your organization?

- Manager with the responsibility of food safety
- Supervisor. Head Chef, Sous Chef, Restaurant Supervisor, chief steward
- Operative. Chef, food server, steward, room service

Do you see an improvement in food hygiene in this country during these last 20 years

Yes No

What do you understand to be your main food safety responsibilities and how can you

Improve them?

How do you rate your level of understanding HACCP?

excellent	good	fair	poor	very poor
-----------	------	------	------	-----------

Do you have a written food hygiene policy or an HACCP manual?

Yes No

Do you have an HACCP team ?

Yes No

If yes can these be identifiable?

Yes No

Do you have any informal training in food hygiene apart from the 5 yearly food handling course?

Yes No

How do you perceive the benefits of a food safety management system in your establishment?

It is a waste of time and resources including unnecessary bureaucracy	
It effectively prevents food poisoning	
It's a defense of due diligence	
It increases customer confidence in our product	
Reduces the number of complaints	
It complies with legislation	

Generally how supportive or unsupportive is your business regarding the implementation of food safety procedures?

very supportive	supportive	not supportive
-----------------	------------	----------------

Do you keep records of your monitoring data?

yes	We do not monitor	Don't know/ Not sure
-----	-------------------	----------------------

Thank you for taking the time to fill up this questionnaire

Appendix 3

Questionnaire adapted for Local people who frequent Restaurants

Please do not write your name on the questionnaire and all information collected will remain strictly confidential

Date _____

Do you see an improvement in food hygiene in this country during these last 20 years

Yes No

Comment

--

Are you confident about the levels of hygiene in restaurants you frequent?

very confident	not sure	not confident
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If not sure or not confident please indicate why

--

Thank you for taking the time to fill up this questionnaire

Questionnaire adopted for Coeliac and gluten free diets.

Please note that the answers for these questions shall remain strictly confidential

Did you have this condition for more than 20 years

YES

NO

Do you think that there has been improvement with regards to government support and policies?

YES

NO

If no what do you think should be done?

How confident are you about the advancement of the EU Regulations regarding food intolerances

Do you believe that gluten free diets is a growing concern ?

YES

NO

How confident are you about the food that you buy from Retail shops?

CONFIDENT

NOT
CONFID

How confident are you about the food you buy from Catering outlets

CONFIDENT

NOT
CONFIDENT

Thank you for taking the time to fill in this questionnaire