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HAND HYGIENE EXPERIENCE OF GASTRONOMY STUDENTS: CASE OF ANADOLU UNIVERSITY

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Abstract

The increase in food based illnesses and poisonings in the world has also led to an increase in the intake of food. Today, when safe and hygienic food laws and practices are increasing, hand hygiene is the mainstay of personnel hygiene, a stage of food safety. The aim of the study is to examine the hand hygiene experience of gastronomy and culinary arts students who will be responsible for food and beverage and food and beverage businesses in the future. In this context, research type was identified as phenomenology from qualitative researches and research place was chosen as Anadolu University. Purposive sampling method was used in the research and the collected data were analyzed by descriptive analysis. As a result, the findings show that participants' knowledge and behavior towards hand hygiene was inadequate and in the direction of the findings some proposes were offered to food and beverage sector and institution provide education on food and beverage.

Key Words: Hygiene, Food Safety, Food Hygiene, Hand Hygiene.

Introduction

Eating and drinking is a must for human health as it is to be done with healthy food. Direct food intake into human body, and serious health issues from simple food poisoning to complicated health issues deriving from this, underlines the importance of hygiene. Human is the most important element in the creation of necessary hygiene in kitchens and food. Kitchen, in spite of the industrialization we are faced today, appears as a working field which directly utilizes human factor.

On the other hand, despite the increasing information, technology and quality control practices today, the amount of diseases and poisonings based on food also increases. According to the researches, 1 out of 1000 persons in the United States falls in food based diseases every year, while this amount is 10 per cent in developing countries, including ours. Increase in the number of collective nutrition places such as hospitals, schools, working places and restaurants, which is a result of urbanization, also increases the risk that many people can get poisoned or sick (Barten, Fustukian, and Haan, 1996).

Considering these facts, food safety is explained as a precautionary concept controlling all the phases related to food from purchasing to stock and from processing to preparation. Personnel hygiene as an important phase of providing food safety ensures the control of microbiological factors that food may be exposed to until arriving at consumer. Hygiene is defined as avoiding any kind of living organism,

object or activity that may be harmful to human health. Hand is an important element in providing personnel and food hygiene (Pittet, Simon, Hugonnet, Pessoa-Silva, Sauvan, and Perneger, 2004).

While there are numerous studies about health and general hand hygiene of kitchen personnel (Ayçiçek, Aydoğan, Küçükbaraaslan, Baysallar, and Başustaoğlu, 2004; Pragle, Harding, and Mack, 2007) no studies were found about the hand hygiene experience of gastronomy and culinary students, that will favor the development of food sector in the future. In those studies conducted on kitchen personnel's food and hand hygiene, it is generally found out that their knowledge and behavior is inadequate. Jevsnik, Hlebec, and Raspor (2008) were found that there are some gaps of food handlers' knowledge on microbiological hazards. especially for those working in catering and retail. Garayoa, Vitas, Diez-Leturia, and Garcia-Jalon, (2011) were found that hygiene practices were applied with systematic incorrect procedures in 60% of the kitchens.

The aim of the study is to search the hand hygiene experiences of gastronomy and culinary arts students at the 3rd and 4th grade of university. Gastronomy and culinary arts undergraduate programs' mission of educating chefs and food and beverage sector supervisors outlines the importance of the study. In addition, expanded effects related to educational institutions and food sector are expected with the study findings.

The research type was identified as descriptive phenomenology from qualitative researches, as the method used in accordance with the purpose of this study and data are collected via observation and interview. Collected data are analyzed with descriptive phenomenology and findings about students' hand hygiene experiences are gathered. As a result, throughout the time spent in the kitchen, it is found out that attendants did not have adequate knowledge and correct behavioral attitudes about personal and exterior contamination for hand hygiene, and not washed their hands correctly and adequately during the cooking process.

Food Safety, Hygiene and Hand Hygiene

Food is an easy tool that the personnel can pass respiratory system diseases such as flu and quinsy, and digestion system diseases such as typhoid, to the customers (Malagie, Jensen, Graham, and Smith, 1998). Considering the risk it can compose, food safety and hygiene in collective food centers has an important place and secured via legal rules. Food Hygiene Regulations and Hygiene Education Regulations, published in accordance with the law no: 5996 dated on 11th of June 2010, are among the regulations that indicate rules on implication (Karaman, 2012).

Food safety is defined as the precautions that require the control of physical, chemical and microbial factors which foods are exposed from purchasing to fork. It is indicated that the possibility which foods lead up to diseases because of microbial factors is more widespread than of physical and chemical factors (Scott, 1996).

Hygiene is defined as "all the cleaning precautions and practices for defending from insanitary environment" as the word-meaning (Whitby, McLaws, and Ross, 2006). The fact that it is the personnel factor which minimizes microbial factors for food hygiene and provides food safety, requires both personnel hygiene and control of the food preparation process. In this context, hand is an organic kitchen tool which necessitates hygiene as the organ to contact food most frequently, as of being very important for personnel general hygiene. In the studies carried on hand hygiene, it is discovered that the number of bacteria on the hands of the personnel working at common food and meat facilities and food and beverage companies is pretty much more than of other people (Cordoba M.G, Cordoba J. and Jordano R, 1999; Seligman and Rosenbulth, 1975).

Contamination reasons of the micro-organisms on hands expand beyond food. Exterior factors such as existing permanent or temporary microorganism on hands and nail gaps, wound and boil liquids, microorganisms on face, eye, nostril and scalp, ornaments on hand and wrist such as watch, ring, bracelet and nail polish, contaminated clothes, apron, fabric and tools, and door handle, rubbish, food

packages, increase the number of microorganisms on hands and pose a risk of contamination to food (Marriott and Robertson, 1997). Things to ensure hand cleanness are possible with eliminating all these contamination sources.

Methodology

The research type is descriptive phenomenology from qualitative researches. Main purpose of the study is to search the hand hygiene experiences of gastronomy and culinary arts students at the 3rd and 4th grade. The reason of choosing 3rd and 4th grades is that they are at the stage of graduation and to find out which experiences they have about hand hygiene in the kitchen, where is their practicing area. Within this context, attendants are chosen through purposive sampling. Implication place of the research is determined as Anatolian University. In the research, observation and interview technics among qualitative methods are used and data are collected during practical classes in the kitchen. Related literature is analyzed while composing the observation form and interview questions and 3 Gastronomy and Culinary Arts, 1 Hygiene and Sanitation experts were consulted. First, 10 students were observed through nonparticipant observation technique in the practical classes and then same students were interviewed face-to-face. Observation was carried out as 3 hours per week for 4 weeks between 16 April 2018 and 16 May 2018. During the interviews, semi-constructed questionnaire form was used, and these 10 students were interviewed between 16 May 2018 and 30 May 2018. Data collected through observation and interview methods were themed about research purposes and analyzed with descriptive analysis method. Sub-purposes and themes set down about research main purposes:

- Finding out if students have taken education on food safety and hygiene at or out of the school before, and stating the benefits of such education for hand hygiene,
- Measuring the knowledge and experience of students about achieving hand hygiene in the kitchen,
- Measuring the knowledge and experience of students about the correct way of hand washing and drying,
- Measuring the knowledge and experience of students about cross-contamination between foods and equipment,
- Measuring the knowledge and experience of students about personal contamination,
- Measuring the knowledge and experience of students about exterior contamination,
- Measuring the experience of students about smoking in general and in the kitchen specifically.

Findings

Findings on the participants' gender and educational background

When Table 1 is analyzed, it can be seen that 4 of the participants are male and 6 of them are female. 4 of the participants are at the 4th and 6 of them are at the 3rd grade. Most of the 3rd grade students have taken the food safety and hygiene course as a separate course. In addition, most of the students have not taken a separate course on food safety and hygiene but get related information within the context of other courses. The fact that food safety and hygiene course is selective in the gastronomy and culinary arts department explains the phenomenon. Participants A, G and I among those who took the food safety and hygiene course talked about the education they took about hand hygiene, correct way of hand washing, use of glove, common hygiene rules and smoking within the framework of the course, on the other hand participant B made the comment that the course was not intense and focused. Participants E and I, who took the food safety and hygiene education at the internship, indicated that it did not made a practical contribution and the possibility to reflect the theoretical information to practice is low.

Table 1 presents information on the participants' gender and educational background.

Participant's code	Participant's gender	Participant's grade	Participant's education on food safety and hygiene	Place where the participant received the education on food safety and hygiene
A	Female	4 th grade	Yes	School/ as separate lesson
B	Male	4 th grade	Yes	School/as separate lesson
C	Female	3 rd grade	No	
D	Female	3 rd grade	Yes	School/ in other lessons
E	Male	4 th grade	Yes	Internship
F	Female	3 rd grade	Yes	School/ in other lessons
G	Female	3 rd grade	Yes	School/as separate lesson
H	Female	3 rd grade	Yes	School/ in other lessons
I	Male	3 rd grade	Yes	Internship
J	Male	4 th grade	Yes	School/as separate lesson

Table 1. Participants' gender and educational background.

Findings on the participants' knowledge and behaviors about common hand hygiene

All of the participants expressed opinion about the rules on hand hygiene that must be followed by kitchen personnel. They have information on at least two of the rules that must be followed while going in the kitchen like eradicating contamination sources from hands such as short nails, nail care and nail polish, covering of infections and wounds, washing hands, prevention of cross contamination. While participants B, C, D, E, G, H, I and J mentioned the necessity of washing hands, and shortening and cleaning nails to provide cleanness in the kitchen, participant D also added that nail polish is a source of contamination. The fact that all female participants had no nail polish and others' short and well-cared nails during the observation period supports this finding. However, it was seen that participants' knowledge about regular hand washing was not put into practice in the kitchen. Except participants A and E, it was discovered that while practicing, participants were weakly habited in washing hands and other behaviors that can cause contamination such as smoking, touching uncooked meat, phone or product package.

While participants G and H declared that the infection and wounds on hands had to be covered with a band-aid or glove, it was observed that participant H did not covered his wounded hand, and the finding that theoretical knowledge was not put into practice was also supported in this field.

Participant A provided the most limited information about ensuring hand hygiene. This data was supported during the participant's observation period. Participant A's behaviors about shortened and cleansed nails and hand washing habits were observed to be very weak.

Findings on the participants' knowledge and behaviors about the correct way of hand washing and drying

Most of the participants provided information about using soap and rubbing fingers and nails for a while, which are important criteria of correct hand washing. Participants A, B, C, D, E, F, I and J declared that hands must be washed at least 30 seconds; participant B gave the full information about the subject and said *"Correct hand washing, the most important thing is time, and what we disregard is foaming, we take some soap and wash hands very shortly. Right amount of soap and at least 20*

seconds... time is actually about the period required for bacteria to die. This is what we aim. In addition, nails must be well rubbed and rinsed. We mostly dry without rinsing adequately and we work with chemical residue on our hands." Participants A, E and I never mentioned to use of antiseptic while washing hands. This finding about the participants was also observed during implication. It was observed that participant I did not wash hands in the kitchen even when it was necessary or washed with only water for a short period, and participants A and E used dish washing liquid despite the existence of antiseptic soap in the kitchen. Apart from participants A, E and I who did not mention that hands must be washed with soap; it was observed that the information given by the participant G who declared that hands must be washed with a disinfectant soap and participants B, C, D, F and H who declared that hands must be washed with soap was not reflected to their hand washing behaviors. Among the data that were observed was that these participants washed their hands in the dish washing basin with dish washing liquid for a very short period of time. About these data, it can be interpreted that nearly all the participants did not wash their hands in the correct way and time.

All participants, but I, declared that hands must be dried with a clean, paper, single-use napkin or drier, but it was observed that this information was not followed all the time and they dried their hands on the kitchen clothes and apron and pants they wear outside. An additional important finding about this was that the participants did not wear the apron only in the kitchen but also went out with it. Participants not taking care about the cleanness and tidiness of the apron is also among the observed data.

Findings on the participants' knowledge and behaviors about preventing cross contamination between food and equipment

All participants have correct knowledge about cross contamination between food and equipment. All of them mentioned that cooked-uncooked meat and food, vegetable and meat-milk products must not be processed on the same bench and with the same equipment, and hands and equipment must be washed after each process. However participants I and J continuously and participant C rarely were observed to have the risk to contaminate between uncooked-cooked meat and food, vegetable and baked products. In this context, it can be said that participants have knowledge about cross contamination but some of them did not reflect this knowledge to their behaviors from time to time.

Findings on the participants' knowledge and behaviors about preventing personal contamination

It was found out that participants could not satisfyingly explain the relationship between personal contamination and hand hygiene. All participants underlined the importance of washing hands frequently and participants G and H added the necessity of routine health controls. In addition to frequent hand washing, participant F added that infections and wounds on hands must be covered and participant D mentioned the importance of washing hands while going in and out the toilette and kitchen. Participant I declared the importance of personal cleanness apart from hand washing. Only participant B mentioned the existence of bacteria on organs such as face, nose, hair, ear, which is important in personal contamination. The participant said *"It is important where we put our hands on. Touching to our hair or nose. Because, even if it is a very small moment, contamination to our hand occurs. Then, is there a flux when we enter the kitchen? Our nose? Nasal? Are we coughing? Do we let something out of our body? Do we touch with our hand?"* This finding about the participant was supported during the observation process. It was observed that the participant washed hands while going in and out the kitchen and after touching to his organs such as hair, nose, face, wore a bonnet and cared his personal and equipment cleanness. Inadequate knowledge of all other participants' was supported by observation. Among the data observed are participants A, C, D, E, F, G, I and J frequently touched their organs such as face, nose, hair and did not wash hands afterwards, males did not wear bonnet from time to time and women only used hair band. In addition to participants' inadequacy of knowledge and practice, some missing knowledge in the rules of getting in and out the kitchen can also be interpreted. Another point that was observed was that participants protected their hands while sneezing and coughing.

Findings on the participants' knowledge and behaviors about preventing exterior contamination

All participants, but A, expressed idea about exterior contamination. While participants C, D, E, G, H and J mentioned smoking, exterior clothes, shoes and slippers about exterior contamination, participants B, G and I added the product package factor to that. Participant F is the only one who mentioned cosmetics factor. The participant said *"Actually cosmetic products do matter. It is forbidden to use but people use perfume and deodorant, etc. I mean, I can give that example. They contaminate to what we wear and to our hands from there. We dry our hands or equipment to these clothes."* Despite their knowledge about exterior contamination, it was observed that participants' behavior did not support the data. Smoking participants A, C, D, G, H and I went out to smoke during course breaks but did not wash hands while coming back into the kitchen. In addition all participants, except B, brought their phones into the kitchen and touched them frequently while cooking. Participants C, D and E even put their phones on the chopping boards, which was another observed data. None of the participants washed their hands after touching exterior contamination sources such as pants they wear outside, door handle, receipt, food package etc. and continued the cooking process. Participants wearing only top apron, going out and in the kitchen with their aprons and slippers, using phone while cooking and touching the receipts came from outside are all those that reveal the inadequacy of knowledge and behavior obtained about exterior contamination. In addition, about the finding, it is also seen that inadequacy of kitchen rules caused exterior contamination.

Findings on the participants' behaviors about smoking

All participants, but A, expressed that they use cigarettes. Also it was observed that all participants who used cigarettes except participant J continued to smoke during to breaks of practice lesson.

Conclusion

Hand hygiene is the most important prerequisite for ensuring hygiene of the kitchen and the food prepared in it. Although hand hygiene is the most important prerequisite for the preparation of healthy and hygienic food, it is also seen that this is disregarded most of the time. Either the speed requirement of the working conditions or the limitations of the working field cause this fact to be ignored usually.

The aim of the study is to examine the hand hygiene experience of gastronomy and culinary arts students who will be responsible for food and beverage businesses in the future. In relation to the aim, 3rd and 4th grade students of the Anadolu University Gastronomy and Culinary Arts Undergraduate Program were observed, and face-to face interviews were conducted with these students.

As a result, findings were reached about the main purpose and defined sub-purposes of the research. 6 out of the 10 participants were female. 4 of them have taken the food safety and hygiene course as a separate course, 3 of them have not taken this education at school. Most of the participants have opinion on how the hands of a person's hands has to be while going into the kitchen. Although all the participants have knowledge about eliminating contaminate sources from hands such as nail shortness and care, cleanness of hands, nail polish and washing hands after smoking, it was observed that this theoretical knowledge was not realized in practice. While it was found out that most of the participants get into the kitchen with clean, un-polished and well-cared nails, the evidence was that they also did not get used to wash hands as a primary hand hygiene rule in the kitchen. It was discovered that most of the participants did not usually wash hands after entering the kitchen. Köksal, Soysal, Ergör ve Kaner (2016) are among the researchers who found out that the personnel working

in the kitchens of health businesses are pretty weak in hand washing despite the very much qualified education they were given about that.

While having deficient knowledge about the correct way of hand washing, it was discovered that participants have knowledge about the period of hand washing and the use of disinfectant, a clean rubber or single-use napkin. However, it was also discovered that the knowledge the participants have was not practiced in their behaviors. It was observed that nearly all of the participants washed their hands with the dish washing soap for an insufficient period of time, despite the existence of antiseptic liquids and single-use napkins in the kitchen and dried their hands with different clothes such as the apron and clothes they wore outside. Participants are wearing their kitchen apron and clothes also outside of the kitchen.

It was found out that all of the participants had knowledge about cross contamination and most of them cleansed the equipment and their hands after processing with different foods and equipment. Their knowledge and behavior about personal contamination is, on the other hand, very weak. In addition to not explaining personal contamination subject satisfyingly, they frequently expressed behaviors that may cause personal contamination in the kitchen. It was observed that most of the participants touched their organs such as nose, hair and face, and did not wash their hands afterwards. About this finding, it can be said that female participants used hair band instead of bonnet and this caused them to touch and fix their hair. It was discovered that knowledge of participants about exterior contamination was limited. All of them mentioned some points about exterior contamination. While most of the participants have knowledge about the necessity of washing hands after smoking to prevent exterior contamination, they did not practice this rule in their behavior. The finding was that most of the participants had smoking habit and did not wash their hands after smoking. In addition, it was observed that most of the participants have touched to exterior contamination sources such as phone, lighter, paper receipt, food package that are used outside and door handle during the implementation period in the kitchen and did not wash their hands. Absence of a rule about not bringing exterior contamination sources into the kitchen, such as receipt and packed food, is another important finding. These findings were also encountered in other studies. In his study that searched the sanitation and hygiene knowledge of hotel kitchen personnel, Can (2008) explored that the personnel did not have enough knowledge about personal cleanness and practices. Demirel (2009) have reached the finding that the personnel working in fast food sector have inadequate knowledge about both personal and exterior contamination.

In accordance with all these findings, about hand hygiene, it was discovered that participants have general knowledge about general hand cleanness and care, cross contamination between food and equipment, but did not have adequate knowledge about personal and exterior contamination. Compared to their knowledge about exterior and personal contamination, their frequent behaviors that may cause exterior contamination can be explained with this lack of knowledge; but it can be interpreted that their habits were not developed enough considering that they have not washed their hands often enough while entering the kitchen. It is thought that it would be convenient to make some suggestions to both education institutions and businesses that cover food and beverage services, as a result of the findings of the study:

- For a healthy society, healthy individuals, healthy food and beverage and tourism businesses, hand hygiene must be a mandatory education course to those working in all related institutions.
- Because gastronomy and culinary arts students have to be equipped with full knowledge about food and personnel hygiene, hygiene and sanitation must be a mandatory course at the 1st grade.
- Antiseptic soap, hand washing basins and paper tissues must be placed at the entrance of kitchens and hand washing behaviors must be observed with cameras if necessary.
- Kitchens must be entered only with clothes, aprons and slippers used in the kitchen.

- Hair must be fully covered with bonnet while going into the kitchen.
- Phone use must be forbidden during the time spent in the kitchen.
- In the kitchen, smoking must be forbidden during the breaks.
- Foods must be taken into the kitchen within a gastronomy, after uncovering from packages.
- Sources that may cause exterior contamination such as napkin and equipment must be kept out of the kitchen.

Literature must contain other studies that will support the research. More detailed studies must be conducted that will lay down the rules of going in kitchen in means of equipment, personnel and food; personnel behaviors of kitchens that apply correct and strict rules and others must be comparatively searched, and studies about increasing hygiene habits must be expanded.

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