



## THE EFFECT OF FOODS CONTAMINATED WITH MICROBES ON HUMAN HEALTH

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**Abstract:** The aim of the study is to know the effect of contaminated microbes on human health and what their harms are, the importance of the extent of the effect of foods not prepared in a safe and correct manner and the presence of microbial load in these foods, what are the causes or risks of people being exposed of food poisoning to a large extent as a result of these foods, what are the health steps or procedures to avoid them. Food contamination with microbes. What is the role of hygiene in avoiding the dangers of food with microbes. Questionnaire was created through the Google Drive application, where this questionnaire was distributed to social networking groups WhatsApp, where 700 answers were obtained from those (health practitioners of the city of Mecca), out of a total of 650 questionnaires.

**Keywords:** effect, foods contaminated, microbes, human health

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**Introduction:**

Currently, there has been arising interest around food hygiene and safety, as well as around the happening of food borne illness because of the strict connection with Public Health. In this respect, microbiological food pollution with pathogens microorganisms, their persistence, replication and/or toxin production has become one of the main concerns to consumers, food industries and regulatory agencies all around the world. The term food spoiling indicates to the food or water containing something that makes it unfit for human or animal consumption, whether it is hurtful microorganisms, or toxic or severely toxic chemicals polluted with contaminated substances, which may outcome from eating only a simple food with illness, the most popular of which are many diseases. Food toxicity<sup>(1)</sup>. It is considered an easy cooking way for transporting microbes to be imported. Therefore, food must be block from becoming bad with microbes in order to keep public health in any human society, by following several paths to combat food contamination, such as not allowing food to harbor insects and soil, and washing vegetables and fruits well, among others. Wash the contact before any breakfast<sup>(2)</sup>. Food microbial contamination can occur at any phase of the food chain and could be cancel by applying good manufacturing practices, danger Analysis Critical Control Point (HACCP) notions, raw material control, and maintenance of the cold chain at the industry and retail levels<sup>(3,4)</sup>. It can be referred not just to the growth of undesired microbes but also to the production of toxic molecules resulting by their metabolism, such as mycotoxins<sup>(5)</sup>, or biofilm formation<sup>(6)</sup>. Microbial food-borne illness (FDB) is one of the central concerns in terms of public health because of the high risk of microbial spoiling of foods by several types of biological hazards, causing personal distress, preventable deaths, and avoidable economic burden<sup>(7,8)</sup>. Every year, at least two billion people worldwide are impact by FBD, for this cause this illness are recognized among the greatest public health problems in the contemporary world<sup>(9)</sup>. Among the most popular symptoms cause by foodborne pathogens there are nausea, vomiting, abdominal pain/discomfort, diarrhea, fever, and lack of appetite<sup>(10)</sup>. It is possible control or prevent the food microbial infection by the application of good manufacturing practices, a strict raw material control, and the maintenance of the cold chain at the industry and retail levels<sup>(11)</sup>. Several research have highlighted the need to carry out a food safety training and education for food handlers, because of the lack of knowledge on microbiological food hazards, food storage

temperatures, cross contamination risks and the importance of personal hygiene. The application of the education process, practices and perspectives can contribute to the effect of good manipulation practices, guaranteeing the food safety and food quality to the consumer, reducing also the incidence of food borne disease<sup>(4,11)</sup>. In addition, food irradiation has received much attention as non-thermal technology, and it can be defined as the application of ionizing radiation in small doses suitable as a decontaminant technology for improving the food safety and increasing the shelf-life<sup>(12)</sup> through the bacterial inactivation caused by their DNA spoiling. However, due to the possibility of radioactivity generation in foods<sup>(13)</sup> the utilization of this technique outcome controversial. Moreover, this technique shows value drawbacks, due to the low penetrating power of irradiation for controlling pathogenic bacteria, resulting in a limited efficiency, especially when used on food having irregular surfaces. Therefore, it has been suggested that the utilization of irradiation, in combination with other technologies and methods, can represent a suitable practice to be adopted against microbial contamination in foods<sup>(14)</sup>.

**2-Material and Methods:**

The study started in (the holy city of Mecca in Saudi Arabia), began writing the research and then recording the questionnaire in April 2022, and the study ended with data collection in August 2022. The researcher used the descriptive analytical approach that uses a quantitative or qualitative description of the social phenomenon (The effect of foods contaminated with microbes on human health). This kind of study is characterized by analysis, reason, objectivity, and reality, as it is concerned with individuals and societies, as it studies the variables and their effects on the health of the individual, society, and consumer, the spread of diseases and their relationship to demographic variables such as age, gender, nationality, and marital status. Status, occupation<sup>(15)</sup>, And use the Excel 2010 Office suite histogram to arrange the results using: Frequency tables Percentages<sup>(16)</sup>. A questionnaire is a remarkable and helpful tool for collecting a huge amount of data, however, researchers were not able to personally interview participants on the online survey, due to social distancing regulations at the time to prevent infection between participants and researchers and vice versa (not coronavirus participation completely disappearing from society). He only answered the questionnaire electronically, because the questionnaire consisted of thirteen questions, all

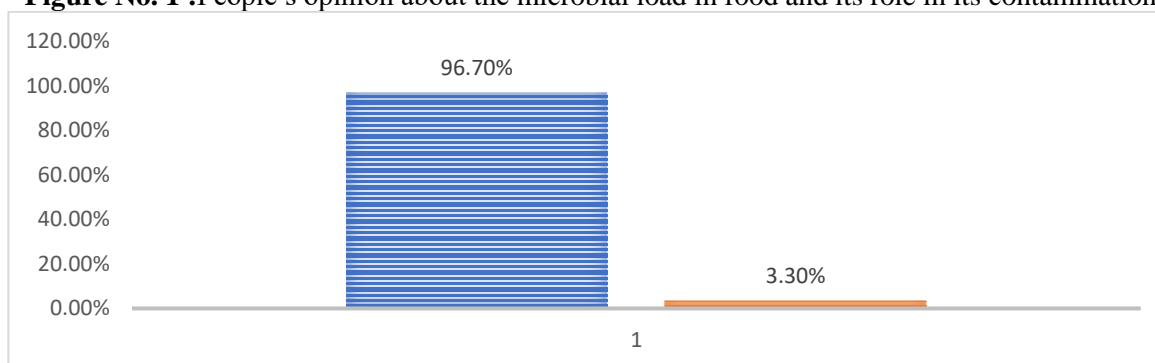
of which were closed. The online approach has also been used to generate valid samples in similar studies in Saudi Arabia and elsewhere<sup>(17)</sup>

### 3- Results:

Regarding the age of the participants in answering the research questionnaire: it was as follows: from the ages of 16-27 years, 1.6%, from the ages of 28-37 years, 25.8%, from 38-47 years, 27.4%, from the ages of 48-57 years, 33.9%, from the age of 58-60 years was 11.3%. As for the gender of the male and female participants in the research questionnaire, the percentage of males was 59.7%, and the percentage of females was 40.3%. As for the educational status of men: the percentage of illiterate (does not read) was 0%, the primary stage was 0%, the middle stage was 2.5%, and the secondary stage was 2.5%. , diploma 19.5%, bachelor's degree 53.7%, master's degree 17.1%, doctorate 4.7%. As for the educational status of women, it was as follows: illiteracy (does not read) 0%, primary 2.5%, intermediate 2.5%, secondary 2.5%, diploma 19.4%, Bachelor's 45.2%, Master's 12.9%, Doctorate 12.9%. As for men's jobs, they were as follows: 0%, retired 7%, 0% student, 7% in private sector. As for women's jobs, they were: housewife 12.5%, retiree 8.3%, student 0%, private sector 12.5%, government employee 66.7%. Regarding the first question: Have you ever eaten food outside the home and noticed a change in its smell and taste? The answers were yes 80.6% and no 19.4%. The second question was: Have any of your friends ever gotten food poisoning from a restaurant before? The answers were yes 82.3%, no 17.7%. The third question: Do you have knowledge or experience with

microbially contaminated food? Yes 68.9%, No 31.1%. The fourth question was about how do you know that the food in front of you is healthy and free of microbes? The answers were mostly cooked with a good smell, no change in color or smell, taste without smell. The fifth question: Does the place have a role in the quality of the food presented to you? Yes 96.8% and No 3.2%. The sixth question: What are the symptoms of food poisoning? The answers were: diarrhea, vomiting, headache, dizziness, abdominal pain, vomiting, vomiting, and fever. The seventh question: What are the microbes that cause food contamination? Salmonella, S. coli, Shigella, Bacillus ceris. The eighth question was: Do you think that cleanliness is an important factor in the quality of the food provided to you? Yes 98.4% and No 1.6%. The ninth question: Do you think that the secret of food quality is the cleanliness and preparation of its workers? The answers were yes, 98.4% and 1.6%. The tenth question: Do you think that microbial load has a role in food contamination? Yes, 96.7% and no, 3.3%. As for the eleventh question: What are the ways in which food is contaminated with microbes? Uncooked food, keeping food out of the refrigerator for a long time, unclean food, incorrect storage, using unclean tools and poor storage, not cooking food adequately, general and personal hygiene, cleanliness of employees, cleanliness of the place. The last question: What are the ways to prevent microbial contamination of foods? Hand hygiene, washing vegetables and fruits well before cooking, cleaning food well and cooking it well, washing and hygiene, personal hygiene, maintaining the cleanliness of the workers, the place, and storing the food.(Figure No. 1)

**Figure No. 1 :**People's opinion about the microbial load in food and its role in its contamination



### 4-Discussion:

We conclude from this study, based on people's opinions, that food contamination is due to the lack of cleanliness of food before washing, whether fruits and vegetables, the lack of cleanliness of the utensils used in cooking, and

the lack of cleanliness of the food preparer also in its first or last stages.

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