



**KNOWLEDGE ATTITUDE AND PRACTICES OF CITIZENS TOWARDS MILK - BORNE DISEASES IN ALAQABA, JORDAN IN 2017**

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**ABSTRACT**

Milk products are considered one of the most important consumed foods in Jordan. Because of the spread of methods of cheating and contamination of dairy products, this can lead to food poisoning and diseases affecting human health. The distribution of questionnaires on dairy consuming households shows that the vast majority of consumers can distinguish clean milk from the non-clean, and they have the ability to distinguish milk and its products through appearance, color, taste and knowledge of the causes of corruption of yoghurt, yogurt, cheese, butter and margarine. And their high knowledge of the distinction of corrupt and polluted milk, which carry many diseases, and their knowledge of preservatives, which are considered to be the most harmful substances dairy products. The study concluded that households consuming milk and dairy products have high knowledge of milk and dairy products, in terms of distinguishing clean milk as well as its signs of corruption and causes of pollution and its role in the transmission of diseases and good health practices. The study recommended the importance of the milk source and activating the role of health control on dairy factories, And to contribute to research and studies with the concerned departments to improve the specifications of milk and milk products and the use of natural preservatives instead of adding the preservative chemicals Human health.

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**INTRODUCTION**

Yoghurt is one of the most important products in some Arab countries and has been used as a staple food for the peoples of the Middle East (Sodini *et al.*, 2004) and it is increasingly important in Arab and European countries for its many health benefits and its use as functional foods in prolonging human life (Rohm *et al.*, 1994). According to nutritionists the longevity of the population of Bulgaria, the Caucasus and Anatolia is the highest in the world. The reason for this is that the food of these peoples is the basis of fermented milk, which gave their bodies the ability to regenerate permanent vitality and fixed appearance and the integrity of organs diseases, and that yoghurt contains The highest nutritional value known long ago in the Balkans until they called it long-term food. Milk may help in the systems of thinness It contains on the one hand a small proportion of fat in the case of milk screening and on the other hand contains a high proportion of protein that saves the muscles of the body The face is special s It also contains vitamins B which benefit hair, skin and eyes and help to fight hunger between meals.

The milk should be given to people with weak intestines, weak nerves, irritability, insomnia, indigestion, diarrhea, constipation, stomach and stomach infections. It is also given to children aged 8 or 10 months for allergy sufferers of milk, (Tiger, 2007).

Moreover, eating low-fat milk daily gives the body energy, fills the stomach, relieves hunger and reduces appetite, which is low calorie content, which helps to lose weight (Tremblay *et al.*, 2012) Low fat regularly reduces the risk of type 2 diabetes by 24% compared to those who did not take milk (Steven, 2014).

A study in the United States of America, where milk was compared between seven flocks of organically managed cows and seven traditionally managed herds in North Carolina, where there was no difference in somatic cells between organic and conventional milk and the spread of many bacteria causing the, And milk quality was significantly similar between organic and traditional (Mullen *et al.*, 2012).

The value of milk products to meet the food security and nutrition needs of the world's population is included in food recommendations for health promotion by governments, consumers and health organizations around the world (Bauma and Capper, 2011; Schönfeldt *et al.*, 2011). Recent studies

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have revealed that consuming large amounts of dairy products may help reduce the risk of chronic diseases such as cardiovascular disease, diabetes, obesity, metabolic syndrome and many cancers (Kliemand Givens, 2008; Kratz *et al.*, 2012; Elwood *et al.*, 2012). This indicates the importance of dairy products in child development, health maintenance and prevention of chronic diseases (Bauman, 2011 and Lock). Recently, some animal treatments have been introduced to increase milk production. This supports the notion that milk produced under certain conditions is healthier and safer than other dairy products. Organic farming, non-use of GMOs, pesticides and antibiotics has been called for on the quality of milk and its products. This means that milk is described as safer and better for most consumers who have little knowledge about nutrition, management practices on farms, and the manufacture of dairy products. (Erasmus, 2007; Vicini *et al.*, 2008).

### **Research Problem**

According to the statistics of the Jordanian Ministry of Health, the dairy and its products are among the most common foods that lead to many diseases in the Hashemite Kingdom of Jordan. These diseases are the most common diseases recorded in the epidemiology department related to the methods of transporting milk and dairy products from 1990 to 2015. These diseases are Maltese fever, Tuberculosis (Tuberculosis), Typhoid and Paratyphoid, and Diarrheal Diarrhea (Amoebic dysentery) with the number of infections in 2015 as follows (Maltese Maltreatment (384), tuberculosis (268), typhoid and paratyphoid (10) ) Injuries (402) cases, where there was an increase in the number of cases from 2014 to 2015 in Maltese fever in the Directorate of Health in the capital from (3) cases to (13) cases, (24) cases, and the Directorate of Health of Tafleeh from (12) cases to (19) cases and directorate health of the dispenser from (18) cases to (33) cases, and the directorate of Karak health from (59) Aqaba from 93 cases to 105 cases, and there was an increase in the number of cases from 2014 to 2015 in tuberculosis in the Directorate of the Capital Governorate from (121) injuries to (125) and the health department from (37) To (85) injured, and director Health of Aqaba (9) injuries to 10 injuries. It was also noted that there was an increase in the number of cases from 2014 to 2015 in typhoid and paratyphoid in the Directorate of Health Capital from (0) cases to (2) status and the Directorate of Health Petra from (0) to (1) case and the Health Directorate of Mafraq from (0) To (1) cases, and it was also noted that there is an increase in the number of cases from 2014 to 2015 with the infected diarrhea (Amesemic dysentery) in the Directorate of Health Capital of the northern Jordan Valley from (0) to (20) case and the Directorate of Health Irbid from (32) to (63) cases and Directorate of Health of Zarqa from (1) cases to (9) cases and Directorate Health Jerash of (6) cases to (9) cases, (Ministry of Health, Jordan, 2015).

In 2014, a case of poisoning occurred in the southern Shouneh area in Al Rawdah area due to drinking non-sterilized milk. The host did not mention the cause. A family of (7) individuals were admitted after eating non-sterilized milk from inside the house and after eating milk for a period of time, Colicosis was reviewed and the introduction of (3) individuals, including the hospital was discharged (4) of them after receiving treatment, (Kharabshe, 2014).

### **Research Objective**

**Main objective:** To understand consumers' perception of the health risks resulting from contaminated milk consumption in the city of Aqaba in 2017.

### **Literature Review**

#### **Pollution of milk Products**

Milk and its products are a good medium for the growth of many types of microorganisms, bacteria and some other microorganisms such as yeast and mold. Once these organisms reach the milk, they activate and multiply rapidly when they have the right temperature because it contains all the nutrients necessary for their growth.

The importance of these microorganisms in milk and its products and their relationship and impact on human life is summarized as follows:

1. Damage caused to milk and dairy products both during and after the industrial stages, because milk and milk products are good for the growth of microorganisms where they multiply and make it unfit as food for humans, causing economic loss for both the consumer and the consumer.
2. Utilization of certain microorganisms in the manufacture of certain products such as yoghurt, cheese, butter, etc.,
3. Diseases caused by some microbes through milk and its products.

#### **Diseases Caused by Microbes are Divided into two Groups**

##### **The First group**

Human diseases spread through milk and its products, where the microbe is caused mainly from human source, and these diseases are divided into:

##### **Bacterial Diseases**

###### **Typhoid Fever**

The disease causes Salmonella typhi, and the digestive tract of humans and animals is one of the most important sources of Salmonella.

###### **Paratyphoid Fever**

It caused by Sal paratyphi, Sal schottmuelleri, and Sal hirschfeldi, the infection comes through food and water contaminated with these bacteria, and found that milk comes after water only as a source of infection, especially in areas where there is no pasteurization or any regular heat treatment of milk.

###### **Dysentery Bacillary**

It caused by Shflexneri, Shigella dysentery, Sh. Sonnei, Sh. shiga, and Sh. Boydi. Human is a source of these microbes in intestinal infections.

###### **Septic sore Throat**

It caused by Streptococcus pyogenesmicrobe , the infection is transmitted through mastitis during milking or saliva of infected and infected people, or indirectly by contaminated water, flies, dust and milk containers.

### **Scarlet Fever**

It caused by *Streptococcus scarletina* microbe, Where toxins are produced that lead to the breakage of red blood cells and is responsible for the emergence of pink rash.

### **Diphtheria**

It caused by *Corynebacterium* microbe diphtheria Infection with this disease is linked to direct infection with infected or infected by sneezing and coughing in milk, as well as by contaminated milk contaminated fingers of nasal secretions, and sometimes found the disease is located on the skin and supplications and nipples of the milking animal.

### **Cholera**

It caused by *Vibrio cholera* microbe, Where the milk is contaminated directly by contaminated hands of infected or infected by the disease or indirectly through water pollution as the microbe is usually in polluted water used for many purposes and even cheating milk

### **Infantile Summer Diarrhea**

It caused by Enteropathogenic *Escherichia Coli* (EPEC) microbe, It is characterized by watery diarrhea and sometimes has mucus and is rarely poisoned, vomiting and low-grade fever.

### **Cholera – like Syndrome**

It caused by Enterotoxigenic *Escherichia Coli* (ETEC) microbe, It occurs as a result of the secretion of the microbial to heat-static and non-heat-stable toxins, intestinal toxins similar to cholera.

### **Dysentery – like Syndrome**

It caused by (EIEC) *Escherichia Coli* Enter invasive microbe, This symptom is also accompanied by stress, fever, inflammation of the colon and the severity of the symptoms vary from the simple case similar to *Shigella sonnei* infection to the condition similar to classical dysentery.

### **Haemorrhagic Colitis**

It caused by Enterohaemorrhagic *E. coli* microbe, This disease is common in western Canada and its incidence is high (Kaper, 1987). The human and animal are pregnant with EHEC microbes in the gastrointestinal tract and the microbial was isolated from healthy animals and also infected with mastitis.

### **Gastro – Enteritis**

It caused by Coliforms microbe Which include *E. coli*, *Citrobacter*, *Klebsiella*, and *Enterobacter Proteus*. It has been found that milk containing a large number of these microbes may remain poisonous to children after being treated thermally for the possible presence of heat-resistant toxins (Stable-Toxins).

### **Mycobacterium Tuberculosis (Human type)**

It caused by Tubercle bacilli microbe It can reach and contaminate the milk through environmental pollution with excretions such as pulmonary tuberculosis (TB), stool (intestinal and liver tuberculosis) and urine (renal fluid) for milkers and milk processors.

### **Viral Diseases**

A group of intestinal viruses that multiply in the intestinal tract of humans and animals.

#### **Poliomyelitis**

It causes the disease in children Poliomyelitis virus, This type was isolated in the milk samples in the reservoirs, as well as the milk taken from the infected flora of the milking animals. It was proved that the non-thermally treated and contaminated milk after the thermal treatment causes the disease (Cliver *et al.*, 1984).

#### **Severe – Epidemic Summer Diarrhoea in Infants**

It causes the disease Enterovirus out of human

#### **Infectious Hepatitis**

It causes Infectious hepatitis virus, this disease is one of the most serious viral diseases transmitted by milk, where some cases recorded by eating milk, has been found that this virus can resist adverse environmental conditions as well as time and heat coefficient of pasteurization.

#### **Parasitic Diseases**

It Caused by a parasite *Cryptosporidium parvum* Non-heat-treated milk contaminated with faeces of human origin or water is responsible for the spread of the disease (Barrett, 1986 and Casemore, 1988).

#### **Amoebio Dysentery**

An intestinal disease caused by a parasite *Entamoeba histolytica* In humans, the symptoms of the disease arise as a result of invasion of the parasite membrane lining the intestines and the path of infection occur through the mouth and then secrete the infectious stage with stool that pollutes water, flies, insects and yogurt

#### **Dianhoca in Children Acute of Chronic**

It Caused by a parasite *Giardia lamblia* Infection is caused by people, especially children, or food and contaminated water (Petersen *et al.*, 1988). This parasite lives in the human intestine and in the intestine. The parasitic stage passes through the faeces and pollutes the environment, such as the water used for drinking and washing dishes that help spread the parasite.

#### **The Second Group**

Animal diseases transmitted to humans through milk and its products, where the microbes that are caused mainly from animal origin

#### **Bacterial Diseases**

##### **Mycobacterium Tuberculosis (Animal type)**

The disease is caused by *mycobacterium bovis*. The disease is transmitted mainly to humans by eating animal-contaminated milk, but infection can be caused by airborne infection. Infection and infection depend largely on the extent of the disease in animals, The bovine tuberculosis microbe reaches the milk directly, where the microbe is produced with the milk of the milking animals suffering from mastitis, and the synovial embryo is transferred indirectly to the milk through the infection of the back area, the nipples, skin, bedding, pots, water, Dust faecal coliforms.

### **Undulant fever (Mediterranean sea fever)**

The disease causes Brucella abortus, a classic and common disease that is transmitted by milk to humans, while the virus causes the disease of abortion or bangs disease in the cows.

### **Malta Fever**

Brucella melitensis, which causes abortion in sheep and goats, has been found to be the most dangerous of these species is the human Brucella melitensis associated with goats in the Mediterranean, where the preferred place for this microbe in non-carrier animals is the breast and mammary gland lymph nodes, The path of infected animals from various sources of pollution with the microbial which enters the blood circulation, including to the udder, where it is produced with milk in a few numbers and that is the direct infection and then the abortion of animals, leading to the presence of the microbe in many numbers in the fetus and placenta and infertility The infection of the uterus and the pollution of the soil and lead to infection infected with dust as well as sources of water and utensils and flies and deal with the animal Milking and milk is indirect pollution and the microbe does not reproduce in the milk but live natural acidity and move to dairy products such as butter and cheese and others, which are made of non-heated milk , Where some studies have shown that the microbe lives in the manufacture of cheese and remains alive for several months (Chapman and Sharpe, 1981).

### **Fever**

It is found that the Coxiellaburnetiimicrobe has a high rate of resistance to natural and chemical substances such as formalin and phenol, and is lived at the temperature of pasteurization due to the formation of internal spores. In the United States, pasteurization depends on the time and heat factor together in the eradication of the microorganism (Anon , 1978), as well as ticks play a large role in the spread of infection among animals. The method of human infection is by inhalation of contaminated substances and dust of amniotic fluid and the membrane of the fetus, as well as raw milk and its products not treated thermally polluted Microbes.

### **Anthrax**

The disease is caused by Bacillus anthracis. This disease is rare. Before the microbe reaches the animal, the animal dies. However, it is possible to have the microbe in animal pens so that the milking workers can be infected by the infected infection spores.

### **Leptospirosis**

This disease is caused by the human Leptospira interrogans, and increases the human infection of this microbe when taking milk immediately after the secretion of the hernia, especially milk produced from the flaming goat of goats and cows, which is characterized by the alkalinity of the interaction, as transmitted from the animal to humans by contaminated food and water contaminated urine, The disease is also a disease of pigs disease or weils disease.

### **Yersinosis**

This causes the disease a microbe pseudotuberculosis, Yersinia enterocolitica Yersinia Symptoms of this infection vary with Yersinia enterocolitica depending on the strain, strain, dose, genetic factors, age and health of the infected person. The pathogenic strains (30) and (80) were isolated from humans in

Scandinavian countries and North America respectively (Winblad, 1981 and Wormser and Keusch, 1981). But the incidence of Y pseudotuberculosis is usually transmitted to humans from wild animals and in some cases from wild birds and rodents.

### **Listeriosis**

It is caused by Listeria monocytogenes after eating contaminated food (Who, 1988). Listeria is also caused by cattle mastitis, milk can be contaminated by animal feces and sewage, and infection is caused by ingestion of raw milk and its contaminated products.

### **Campylobacteriosis**

The disease is caused by Camp coli, Camp jejuni, Camp Fetus. The first two species are common in human infection and the third is rarely produced under special and systemic conditions. Infection occurs through ingestion of polluted milk as well as contaminated water. Cows, sheep, pigs, dogs and birds are the main sources For the microbe, the microbial was found to be goodly pasteurized.

### **Actinomycosis (Lumpy jaw)**

The disease is caused by Actinomycesbovis, which lives in the mouth, the upper respiratory tract, the skin, and the environment surrounding humans and animals, but affects the human through contamination of wounds. When infected, the microbe reaches the milk and pollutes it.

### **Parasitic Diseases**

#### **Toxoplasmosis**

This disease causes the parasite Toxoplasma gondii, which is found at a large rate in birds and mammals in Zoites, in the form of crescent where it is excreted in the milk. This infectious stage is the result of the active vegetative phase. The infection occurs through the contamination of the milk by the vegetative phase of infected and human faeces .

### **Sources of milk Contamination with Microorganisms**

#### **Interior of the Udder**

It Can be contaminated by microbes located in the channels and reservoirs of the hernia, especially along the nipple channel through the microbes that are found naturally in the epilepsy and microbes that pollute the hernia from time to time through the opening of the nipple depending on the state of the animal environment, and the diseased animals that produce pathogenic microbes with milk such as tuberculosis and fever Unknown, fecal,

#### **Exterior of the udder (Surroundings)**

The environment surrounding the milking animal, such as the condition of fur or skin, as well as the contamination of the back area and the dew and tail. On the other hand there are a large number of different microbes in the soil and animal secretions and straw or hay, and others that accumulate on the body of the animal and fall in the milk containers during the milking process.

#### **Air and Dust**

It has been found that air and dust contains microbes, except for some pathogenic microbes, which include about 25 species of bacteria, 16 species of fungi and many yeasts. Although

there is a possibility of Staphylococcus and Salmonella sometimes in air and dust.

#### ***Milk Utensils and Equipments***

All the equipment and containers in which they are treated or stored and transported milk and depends on the presence of species of microbes in the pots on the types of food treated and the cleanliness of these pots and the way of conservation and other factors, and when the containers are kept in an open place where dust can be expected to be bacteria, yeast and fungi loaded with air, Containers can be contaminated from water sources, flies and rodents.

#### ***Soil and Water***

Water on the farm is used in many activities, such as watering the animal, washing the nipple, nipples, cleaning the dishes, washing the dishes and cooling the milk. The polluted water used on the farm is a source of contamination of the milk in many different numbers of microbes. The dry surface of the soil, which is blown by wind, is loaded with microbes, Other than soil, rivers, oceans and others.

#### ***Flies and Rodents***

Flies and rodents are the plague of the dairy industry and its products because they are mechanical carriers for transporting different types of microbes from polluted places to milk, water, pots, etc. The flies carry microbes on their wings and legs from polluted sputum, urine, faeces and feces. Milk is contaminated directly by falling flies in milk With infectious substances or indirectly by placing and leaving these infectious substances on pots, water and others.

#### ***Dairy men (Milkers, Handlers)***

The presence of microflora on the hands and clothing of those who deal with milk often reflects the environment and habits of people. Bacterial strains associated with hands, arms, nasal and oral cavities such as Staphylococcus, Micrococcus, Shigella and Salmonella are mainly intestinal images which may contaminate milk and utensils In the case of failure to follow the rules of health by people, and also the presence of yeast and fungi at the hands and clothes of those who deal with milk depends on the situation of the individual and individuals who deal with dairy animals and dairy products and water sources in the farm.

#### ***Sewage (Animal Manure and Human Excreta)***

There are many species of bacteria found in the intestinal canal of humans and animals and are commonly found in this environment more than soil, water and other places, has been observed that the Escherichia species is the predominant of these races where the intestinal canal of humans and other mammals is the natural habitat for him, and how there are types of races Others are usually in the gastrointestinal tract such as Clostridium Citrobacter, Enterobacter Pseudomonas, and from the intestinal tract of the animal, the intestinal microbes find their way directly to the soil and water.

#### ***Animal Feeds***

Animal food contains all microbes, yeast, and fungi. The presence of microbes in food depends on the source of food and the treatment of food to kill microbes and storage vessels. Animal food has been found to be an important source of food poisoning in Salmonella.

#### ***Animals Hides***

One of the earliest microbes found in soil, water, animal food, dust and faeces could be found on animal skins, from which microbes can once again be in the air or at the hands of workers or find their way directly to milk during milking.

#### ***Toxicology of Milk and Dairy Products***

The toxicity of dairy products is the containment of certain harmful substances, whether for public health or in the manufacture of certain dairy products, such as residues of antibiotics, fungicides, pesticides, radioactive materials, preservatives, chemical disinfectants and botulism.

#### ***Antibiotic Residues***

These antimicrobial agents are used in the treatment of milking animals, although different methods of use include injection or oral methods and sometimes as supplements.

#### ***Mycotoxins***

They are secondary metabolites produced by the activity of fungi on food, which have harmful effects on humans and animals, such as aflatoxins. The scientific reports in the field of fungi confirm that the three species, Aspergillus, Penicillium and Fusarium, Acute poisoning, cancer and other diseases.

#### ***Insecticides and Pesticides***

Milk can be contaminated with pesticides during the process of biting the livestock in the pesticide to prevent tick-borne diseases as well as to control flies and insects. These pesticides are stored in the body's fatty tissues, resulting in cumulative effects.

#### ***Radionuclides***

Exposure to nuclear radiation can be superficial or internal to the organism. For example, surface exposure has an effect on surface tissue of the body. Internal tissue exposure is caused by inhalation of atomic dust or consumption of contaminated food and water contaminated by radioactive elements due to nuclear disasters such as bomb use The World War II disaster in Hiroshima and Nagasaki in Japan, the nuclear reactor accidents in Pennsylvania, USA in 1979, the disaster of the nuclear reactor in Chernobyl in the Soviet Union in 1986, etc., so eating contaminated foods An atom such as dairy does not lead to rapid but long-term damage, resulting in various cancers, fetal abnormalities.

#### ***Heavy Metals***

Studies have been shown on nutrients everywhere of food, and have become a high temperature in fresh and vital water.

#### ***Preservatives and Disinfectants***

These chemicals include hydrogen peroxide, formalin, boric acid, borax salts, benzoic acid, benzoate salts, alkaline salts, salicylic acid and dichromate. Potassium and others.

#### ***Plant Toxins***

The possibility of botanical toxicants in milk should be taken into consideration when eating the poisoned cows. Poisonous plants are produced in the milk in sufficient quantities that cause toxic effects to the consumer.

**Research Methodology**

This study is Experimental descriptive study

**Study Area**

Aqaba is the only Jordanian seaport and is the center of the Special Economic Zone. It is characterized by the availability of integrated infrastructure, social and services services for a prosperous city and a developed regional development center. The city of Aqaba differs from the rest of the governorate in that its urban society and its inhabitants represent a mix of different segments of society as it has become a magnet for the population for work and stability. Their work activities are distributed in the public and private sectors for various economic activities as well as doing business. The nature of Bedouin and rural areas in their livelihoods is concentrated in the armed forces and public security and in the agriculture and livestock sector. In the city of Aqaba there are 32 public schools, 20 private schools and 24 kindergartens (Source: Directorate of Education 2015). There is one university college in the city of Aqaba, 2001 A branch of the University of Jordan / Aqaba was opened in 2009/2010. There is no public hospital in the city of Aqaba, but there are three hospitals are Prince Hashem Military Hospital and two private hospitals, the Islamic Hospital and the modern Aqaba Hospital. The city has 2 comprehensive health centers, 12 primary health centers in various areas of the city, and 1 chest and health center for expatriates. (Source: Directorate of Health 2015), there is no Municipality in the city of Aqaba, where the functions of the Municipality City Services Center of the Aqaba Special Economic Zone Authority, and the Aqaba was upgraded to its Governor on 1/8/1994, and includes the brigade of Aqaba, Wadi Araba, and Al-Qawaira Brigade and currently has the Directorate of Al-Dayseh District. According to the Administrative Divisions No. 46 of 2000, Aqaba and Aqaba are made up of the following administrative units: (1) Qassaba Brigade, Aqaba (2) Wadi Araba District, Aqaba (3) Al-Qawaira (4) Al-Daisah District and following Al-Qweira Brigade and Al-Daisa Center (as shown in map no. 1) (source: Ministry of Interior / Aqaba Governorate 2016).



Map 1 Divisions of Aqaba Governorate

**Study Society**

Households Consumers of Dairy Products in the City of Aqaba.

**Methods of Sampling**

**Questionnaire**

The sample was taken in a simple random stratified manner in the distribution of questionnaires. The city of Aqaba was divided into three districts, which were in the neighborhoods of the rich classes (moles), the middle classes and the classes below the average (regular). The total number of households identified in the city of Aqaba was 160 households distributed among the districts, where 50 questionnaires were distributed by 31.25% to the rich neighborhood (Moulat), 50 (31.25%) to the middle district and (60) A questionnaire (37.50%) on the neighborhood is below average (normal). In order to understand the consumer's perception of the risks resulting from the consumption of milk and its contaminated products and to know their culture in this regard, as in the questionnaire form shown in Annex 1, and contains multiple axes including information related to personal and economic characteristics, information on milk and its products, Dairy products and good hygiene practices.

**Data Analysis**

The Statistical Package for Social Sciences (SPSS) was used to analyze the results of the questionnaire. (Statistical Package for Social Sciences)

**RESULTS AND DISCUSSIONS**

Due to the spread of methods of cheating and contamination of milk and dairy products, which can lead to food poisoning because of the failure to follow healthy practices and the practice of good manufacturing by producers or diseases affecting the human, was addressed in the city of Aqaba to ensure the knowledge of consumers quality and safety of frankincense and its products and diseases related And methods of contamination.

**Analysis and Discussion of Questionnaires**

Personal data of household members participating in the study:

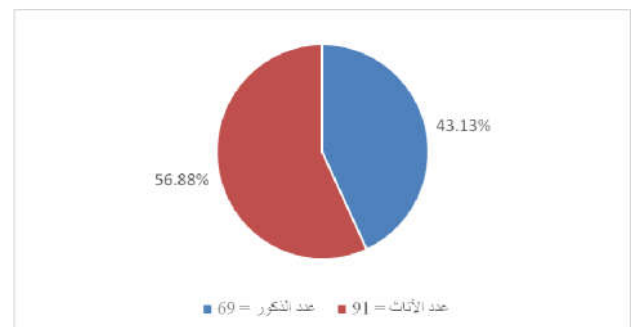


Figure 1 Distribution of participants in terms of gender in the city of Aqaba in 2017

Figure 1 indicates that females are the most frequent category (56.88%). This is due to the fact that females have a desire to identify dairy products and the desire to buy these products because of their high nutritional value. It does not need to be equipped as an employee, and to recognize the importance of proper nutrition in the prevention and treatment of diseases more than males, and this corresponds to what he said (AL-Shoshan, 1990).

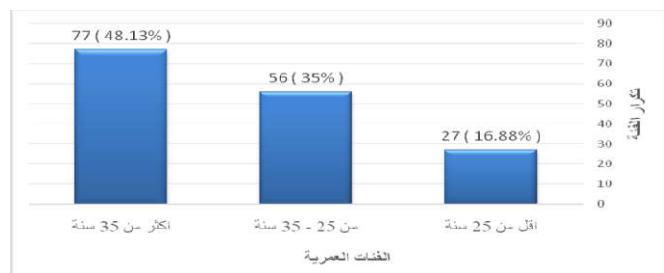


Figure 2 Distribution of participants in terms of age in the city of Aqaba in 2017.

Figure 2 indicates that the category is more than 35 years of age and is the most frequent category (48.13%). This is due to the fact that this category is the age group based on household food and beverage needs to buy more dairy products than other categories.

### Information about Dairy Products

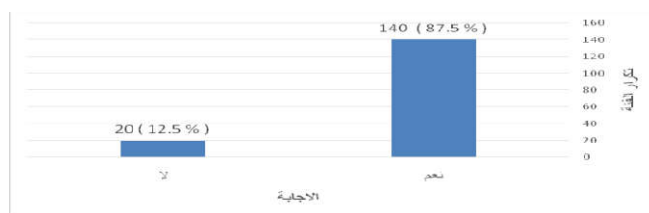


Figure 5 Distribution of Participants Based on their Knowledge of Dairy Hygiene in Aqaba City, 2017

Figure 5 indicates that respondents (yes) are the most frequent category (87.5%), indicating that the participants in the study are able to know the degree of cleanliness of dairy and buy milk clean, due to Their higher educational level, as shown in Figure 4.1.1.3, and because milk is a sensitive material in which the change appears clearly in color and texture.

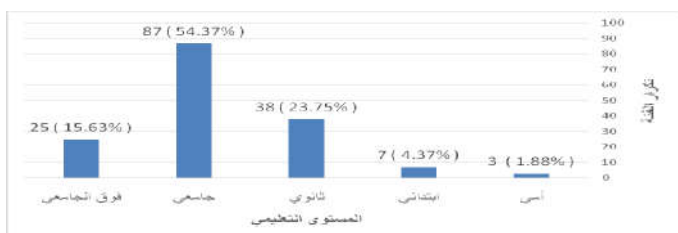


Figure 3 Distribution of participants in terms of educational level in the city of Aqaba for 2017.

Figure 3 indicates that the university level category is the most frequent category (54.37%). This is because the university student has the ability to make purchases and takes into consideration the things to be considered when purchasing dairy products. This is a good indicator of acceptance of advice, guidance and guidance. As well as the impact of education on the nutritional status of families and that the adequacy of the household meal is strongly related to the level of education of the head of the household. This is in line with (Wilson *et al.*, 1971) and the World Health Organization (WHO) Health issues.

Table 1 Distribution of participants according to their knowledge of the health and cleanliness of milk in the city of Aqaba in 2017.

percentage	Frequency*	Poor milk
21.40	58	Milk free of impurities and fouling
29.89	81	A product of healthy and disease-free animals
22.51	61	Free of toxic substances
26.20	71	good taste and natural chemical installation
100	271	<b>Total</b>

### Can Answer more Than one Choice

Table 1 shows that most of the participants consider dairy products to be healthy and disease-free, and that dairy products with good taste and natural chemical composition are healthy and clean dairy, with the highest frequency (81) 29.89% and 61% and 22.51% respectively). This indicates that the participants in the study knew about healthy and clean milk. This is in line with what Al-Nimr (2001) said. Pure milk is the milk produced from healthy and disease-free animals , And has good taste and natural chemical composition.

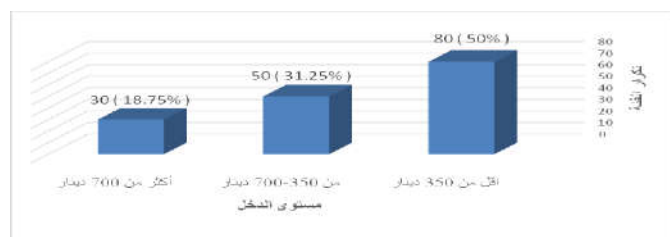


Figure 4 Distribution of participants in terms of income level in the city of Aqaba for 2017.

Figure 4 indicates that the category of income level is less than 350 dinars is the most frequent category (50%). This is because those who earn a monthly income of 350 dinars or less are the most categories depending on dairy products 3 that most of them are employees, and income affects the food habits and the type of food consumed by the household, which is the main responsibility for the type and quantity of food eaten by the family, Al-Shanifi, 1990).

Table 2 Distribution of participants according to their knowledge of the distinction of clean and healthy milk in the city of Aqaba in 2017.

percentage	Frequency	Test
35.31	101	color
35.31	101	taste
29.37	84	smell
100.00	286	<b>Total</b>

### Can Answer more than one Choice

Table 2 shows that the appearance, color, and taste of (101) and (35.31%), followed by (odor) frequency of (84) and by (29.37%). This is due to the rapid change in the color, taste and smell of milk, if it is present in inappropriate conditions, and can be easily identified by the ability to distinguish the eye and the sense of taste and smell of this change in a large and fast, and this corresponds to what Awadallah (2004) in Egypt.

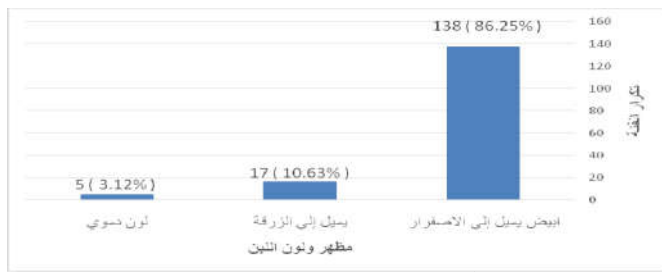


Figure 6 Distribution of participants according to their knowledge of the appearance and color of milk in the city of Aqaba in 2017.

Figure 6 indicates that the white color group tends to yellowing is the most frequent category, 86.25%. This is due to the fact that any change in milk characteristics, even if it is simple, causes a change in color, which facilitates The participants in the study should quickly recognize this change, and their knowledge and high culture of milk, as the color of natural milk is white in camel milk and sheep and white tends to yellow in cow's milk, and this corresponds to what (tiger, 2016).

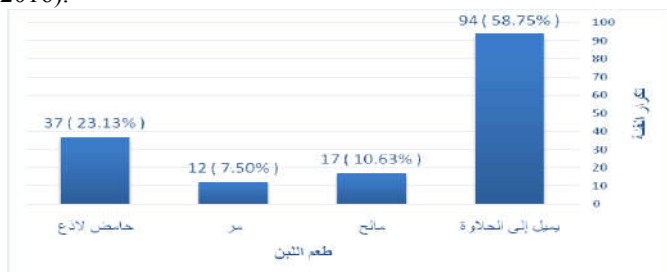


Figure 7 Distribution of participants according to their knowledge of milk taste in the city of Aqaba for 2017.

Figure 7 indicates that the taste category tends to sweetness is the most frequent category, by (58.75%). This is because the participants in the study prefer the taste of sweet dairy because it tastes more palatable to the presence of lactose Of the rest of the other species, and most of them resort to eat milk, especially in hot times to cool thirst, and this corresponds to what (Tiger, 2016).



Figure 8 Distribution of participants according to their knowledge of the smell of milk in the city of Aqaba for 2017.

Figure 8 indicates that odorless milk odor category is the most frequent category (61.9%). This is due to the nature of the human psyche, which favors and encourages the consumption of foods that have a natural smell, and natural milk should not It has an unpleasant smell because it is not bought by participants, and this is consistent with what they hate (Tiger, 2016).

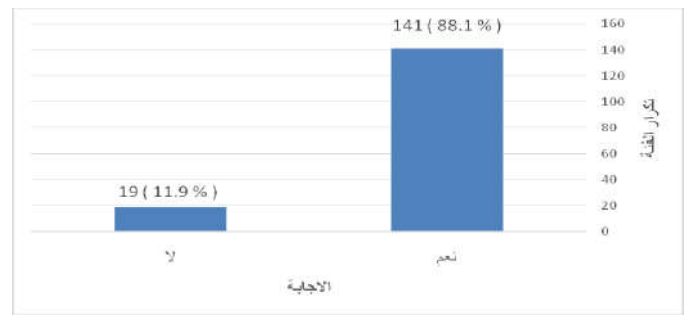


Figure 9 Distribution of participants according to their knowledge of pollutants and spoilage of milk and human diseases in the city of Aqaba in 2017.

Figure 9 indicates that the respondents (yes) were the most frequent category (88.1%). This is due to the easy identification of the participants in the study of the contaminated and polluted milk and the transmitted diseases. Awareness, and this corresponds to what he said (Al-Khuli, 1999).

Table 3 Distribution of participants according to their knowledge of human-transmitted diseases through milk and dairy products in the city of Aqaba in 2017.

Percentage	Frequency	Infectious diseases
13.45	30	Tuberculosis
52.91	118	Brucellosis
37.22	83	Food poisoning
5.38	12	Tefaweed
100	223	<b>Total</b>

Can answer more than one choice

Table 3 shows that Maltese Fever and Food Poisoning reached the highest percentage of participants (118), (52.91%), (83) and (37.22%) respectively, indicating awareness The most common diseases of the milk and its products, especially Maltese fever, the most common types of diseases from animal to human through dairy and the ways of transmission, whether through the consumption of dairy products carrying germ or meat or the arrival of the germ to the sources of water and food through urine and stool contaminated with germ, which can To lead to food poisoning, and this corresponds to what Shehata (2004) in Egypt.

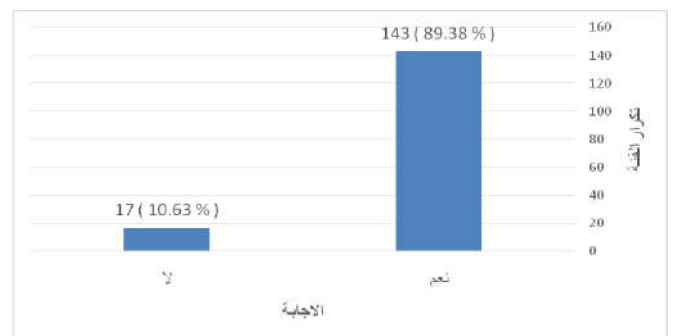


Figure 10 Distribution of participants according to their knowledge of pathogens in the city of Aqaba for 2017.

Figure 10 indicates that the respondents (yes) are the most frequent category (89.38%), due to the extent of awareness of the participants in the study causes and causes of diseases that result from dairy products and their degree of awareness, This is consistent with what he said (Al-Khuli, 1999).



**Table 4** Distribution of participants according to their knowledge of the most important pathogens transmitted to humans through dairy products in Aqaba City, 2017

percentage	Frequency	Causes
36.30	102	Bacteria
17.44	49	Viruses
19.57	55	parasites
26.69	75	Fungi and yeast
100	281	<b>Total</b>

**Can answer more than one choice**

Table 4 shows that the most frequent cause of the disease (bacteria) reached (102) and by (36.30%), due to the fact that bacteria are the major cause of diseases of dairy animals and their widespread spread in nature and therefore their transfer to milk And derivatives, and this corresponds to what Salama (2000) in Egypt.

**Table 5** Distribution of participants according to their knowledge of how diseases are transmitted to humans in the city of Aqaba in 2017.

percentage	Frequency	Causes
37.72	109	Infected animals
23.88	69	Milking
23.88	69	Trading
14.53	42	Others
100	289	<b>Total</b>

**Can answer more than one choice**

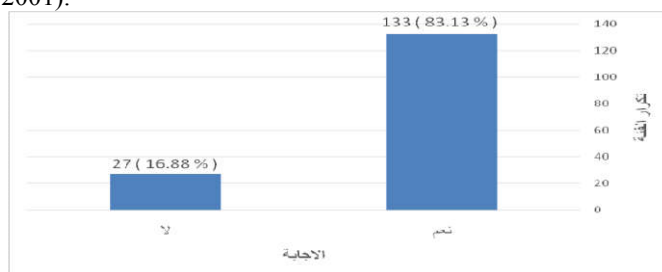
Table 5 shows that the most frequent transmission of the disease (infected animals) reached (109) and by (37.72%). This is because most diseases are transmitted if there is an infected animal, In which the animal can live on its health whether inside or outside the house, which presents it to many health problems and affects its production or life, while the risk of transmission of diseases can be lost in other ways by raising the degree of cleanliness of workers or tools, (2004) in Egypt and Al-Azzawi (2006) in Iraq.

**Table 6** Distribution of participants according to their knowledge of the most important methods of bacterial bactericidal poisoning in the city of Aqaba in 2017

Percentage	Frequency	Causes
49.02	125	Poor dairy conservation
25.49	65	Add contaminated water
25.49	65	Poor transport
100.00	255	<b>Total</b>

**Can answer More Than one Choice**

Table 6 shows that the most frequent occurrence of bacterial bacteremia (dairy misuse) was (125) and (49.02%). This is due to the fact that poor milk preservation contributes to the increase of bacterial reaction and activity, A rapid and significant change in the characteristics of the products, especially in hot climates, where Aqaba is a hot area throughout the year. Leading to higher contribution of poor dairy conservation in cases of bacterial poisoning compared to other causes. This is consistent with what he said (Tiger, 2001).



**Figure 12** Distribution of participants according to their knowledge of harmful substances that lead to dairy toxicity in the city of Aqaba in 2017.

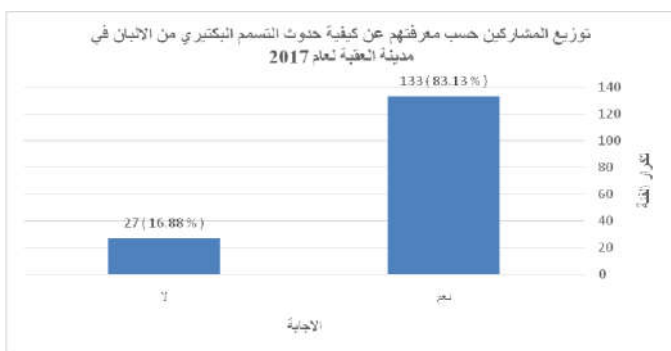
Figure 12 indicates that respondents (yes) were the most frequent category (83.13%) due to the extent of knowledge of the participants in the study of how the poisoning of milk and its products contain some harmful substances Whether for public health or for the manufacture of certain dairy products, and this is consistent with what he said (Al-Khuli, 1999).

**Table 7** Distribution of participants according to their knowledge of the most important harmful substances that lead to dairy toxicity in the city of Aqaba in 2017

Percentage	Frequency	Harmful substances
16.99	44	Antibiotics
15.06	39	Radioactive materials
25.48	66	Pesticide
27.80	72	Preservatives
14.67	38	Heavy metals
100	259	<b>Total</b>

**Can Answer more than one choice**

Table 7 shows that the most frequent occurrence of harmful substances leading to milk toxicity (preservatives) was (72) and (27.80%), as well as (insecticides) reached (66) and (25.48%). And antibiotics (44) and (16.99%) respectively, according to the study participants. The addition of preservatives to milk causes a change in the properties of the natural substance and the side effects on their health. In order to keep them fit for a longer period of time possible, where dairy and its derivatives of the fastest materials are exposed to damage and corruption in the absence of conservation in a good manner, as well as insecticides because of the risk to human health and the environment, especially the high physico-chemical attraction to fat, Where the increase in their use in dairy-producing animals has been observed, as a special



**Figure 11** Distribution of participants according to their knowledge of how bacterial bacteremia occurs in the city of Aqaba in 2017.

Figure 11 indicates that respondents (yes) were the most frequent group (83.13%). This is due to the extent of the participants' awareness of how bacterial bacteremia occurs, especially since most pathogens Due to the bacteria as mentioned in Table (4-2-3-5), and this corresponds to what he said (Al-Khuli, 1999).

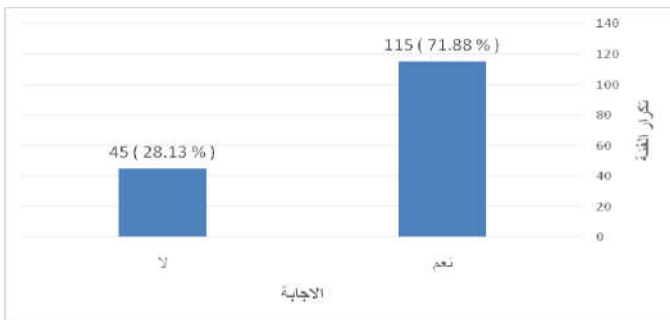
treatment for mastitis, as a growth promoter or as an improvement of the blood, which leads to some health problems in humans. This is in line with what al-Kholi (1999) said about preservatives and Ibrahim (2005) in Egypt on antibiotics, Tahrawi and Rahal (2014) in Algeria on pesticide residues.

**Table 8** Distribution of participants as they know how to transport harmful substances that lead to the toxicity of dairy products in the city of Aqaba in 2017

Percentage	Frequency	transit
21.52	51	Treatment of the infected animal
29.96	71	nutrition
35.02	83	Environment
13.50	32	Others
100	237	<b>Total</b>

**Can answer more than one choice**

Table 8 shows that the most frequent frequency of the transfer of harmful substances that lead to the toxicity of dairy products (environment) reached (83) and (35.02%) and (nutrition) reached (71) and by (29.96%). This is due to the opinion of the participants in the study that the environment contributes significantly to the transport of harmful substances and increase its activity. For example, hot areas such as Aqaba area are suitable environment for the activity of substances and their interaction and thus increase the chance of poisoning dairy products and changing their characteristics, The pathogenesis of fungal toxins directly or indirectly, such as transmission from the animal to the milk after feeding it on top Contaminated with mushrooms. This is in line with what Al-Galoudi (1993) in Jordan reported on lead and cadmium contamination, Hussein (2005) in Iraq for contamination with aflatoxins, and Mersi (2007) in Egypt on fungal toxins (Wahba and Al-Eseer, 2010).



**Figure 13** Distribution of participants according to their knowledge of how the chemical poisoning of milk and dairy products occurred in the city of Aqaba in 2017.

Figure 13 indicates that those who responded (yes) were the most frequent category (71.88%). This is due to the opinion of the participants in the study that the addition of preservatives or any chemicals or metals and high concentrations May cause damage to their health and the occurrence of chemical poisoning as a result of the addition of these harmful substances, and this corresponds to what he said (Khouly, 1999).

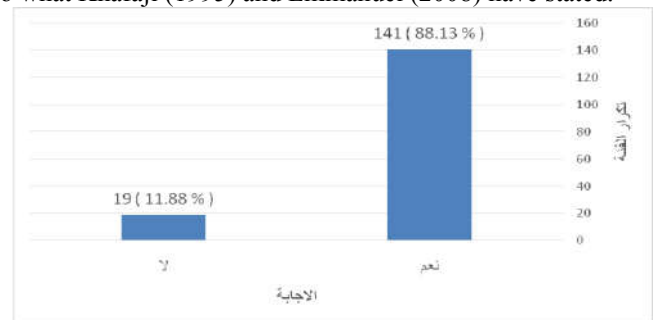
**Table 9** Distribution of participants according to their knowledge of the most important harmful substances contained in dairy products and lead to chemical poisoning in the city of Aqaba in 2017.

Percentage	Frequency	Material
45.31	58	Formalin
29.69	38	Melamine

25.00	32	The hydrogen oxide
100	128	<b>Total</b>

**Can answer More than one choice**

Table 9 shows that the most significant recurrence of the most harmful substances contained in milk and its products leads to chemical poisoning (formalin) of (58) and (45.31%) followed by melamine (38) and (29.69) This is due to the risk of formalin, which is involved in manufacturing, although it is important, but an increase of 3 or 4% leads to the threat of cancer. Melamine is a chemical compound of the annular and the reason for its use is the containment of a large amount of nitrogen, which is 66%, but the use of large percentages lead to cancer. Food contains mutagenic or carcinogenic substances, such as residues of some pesticides with a cumulative effect or containment of chemicals added to concentrations higher than those authorized. This corresponds to what Khafaji (1995) and Emmanuel (2008) have stated.



**Figure 14** Distribution of participants according to their knowledge of the reason for the addition of preservatives and disinfectants for dairy products in Aqaba City, 2017.

Figure 14 indicates that respondents (yes) are the most frequent category (88.13%). This is due to the opinion of the study participants that the addition of preservatives and disinfectants encourages dairy producers to neglect and carelessness In the production and circulation of milk and to keep it as long as possible without the appearance of signs of corruption on the product and profit-making, and this corresponds to what (Al-Kholy, 1999).

**Table 10** Distribution of participants according to their knowledge of the main reasons for the addition of preservatives and disinfectants for dairy products in Aqaba City, 2017

Percentage	Frequency	Causes
33.93	76	Inhibition of microbial growth
51.79	116	Extend the validity period
14.29	32	Hiding corruption caused by industrialization
100	224	<b>Total</b>

**Can answer more than one choice**

Table 10 shows that the most important recurrence of the main reasons for the addition of preservatives and disinfectants for milk and its products (prolonging shelf life) was (116) and (51.79%) followed by (inhibiting growth of microbes) with a frequency of (76) (33.93%), due to the awareness of the participants in the study about the main reasons for adding preservatives to maintain them as long as possible, because they are fast-corrupt materials, and this corresponds to what he said (Kholi, 1999).

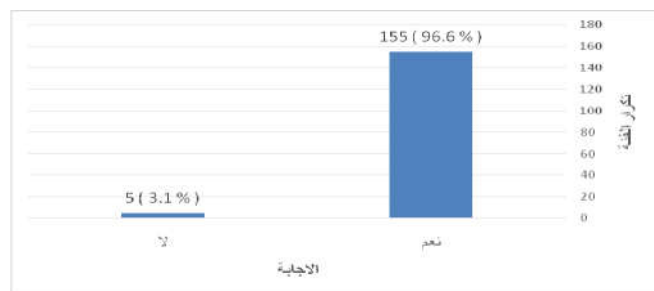


Figure 15 Distribution of participants according to their knowledge of the things to consider when purchasing milk in the city of Aqaba for 2017.

Figure 15 indicates that respondents (yes) were the most frequent category (96.6%), due to the interest of the participants in the study of health and dairy sources at the time of purchase, Tiger, 2001).

Table 11 Distribution of participants according to their knowledge of the most important things to consider when buying milk in the city of Aqaba in 2017

Percentage	Frequency	Things
35.0	103	Source of milk
41.0	121	Methods of conservation
24.0	70	Personal hygiene of the seller
100	294	<b>Total</b>

**Can answer More than one choice**

Table 11 shows that the most important repetition of the most important things to consider when buying milk (conservation methods) was (121) and by (41%) followed by (milk source) with a frequency of (103) This is due to the fact that keeping the milk is cool, in a clean, undiscovered place, and exhibiting a high temperature that limits the growth and contamination of microbes. This requires knowledge of the source of the milk before purchasing.

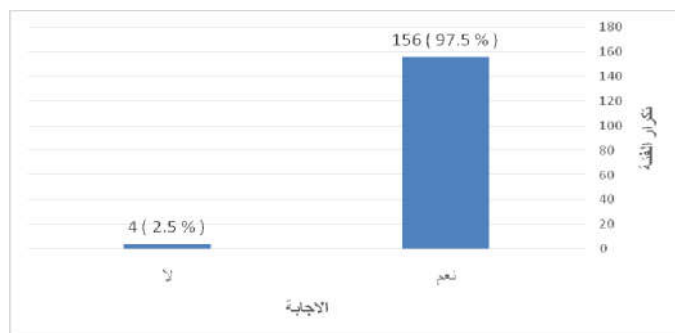


Figure 16 Distribution of participants according to their knowledge of interest in dairy source when purchasing in the city of Aqaba for 2017.

Figure 16 indicates that those who responded (yes) are the most frequent category (97.5%). This is due to the interest of the study participants in the source of milk when buying so as not to be subject to pollution and fraud, With what he said (Tiger, 2001).

Table 12 Distribution of participants according to their knowledge of the most important sources that prefer to buy milk from them in the city of Aqaba for 2017

Percentage	Frequency	Sources
0.49	1	Vendors
59.51	122	Dairy shops
40.00	82	Shops
100	205	<b>Total</b>

**Can answer more than one choice**

Table 12 shows that the most important repeat of the main sources of milk purchase (dairy shops) was (122) and (59.51%) followed by (shops) with a frequency of (82) and by (40%) came This is due to the fact that people turn to dairy shops and shops because they are a reliable source of dairy production and are licensed and supervised by the competent authorities. They are not exposed to sunlight and pollution, as is the case with hawkers, This is consistent with what he said (Tiger, 2001).

**RESULTS AND RECOMMENDATIONS**

**RESULTS**

The vast majority of consumers can distinguish clean milk from non-clean, and they have the ability to distinguish dairy products through appearance, color and taste, because the majority of dairy products have distinctive strength and white color in addition to the taste that is unique to other foods. Any change in milk characteristics, even if minor, causes a change in the appearance of color, making it easier for a person to quickly recognize this change. Most consumers prefer the taste of milk that tends to sweetness and is odorless, mineral, lipid or tasteless.

Most consumers can identify the contaminated and polluted milk that carry many diseases, especially Maltese fever, and know the pathogens of the milk-producing animals, which are the bacteria in the forefront, and which are transmitted by the first infected animals that cause bacterial poisoning, About poor dairy conservation.

Preservatives are the most harmful substances in dairy products according to the study sample survey of preservatives due to the frequent use of dairy products for the longest period of time (prolongation of the shelf life), especially in the warm environment such as Aqaba Governorate. , And the chemical poisoning of dairy products is a form of poisoning that affects milk and dairy products, especially formalin, which is involved in manufacturing, which increase the proportion of the incidence of cancer.

One of the most important things that consumers take into account when buying dairy is the source of milk, where it is preferred to be a dairy shops because the reliable source protects the family from diseases and microbes so that it is cleaner, and also be cool so as not to be susceptible to growth of microbes, Production and finishing, and that milk is sterilized thermally because it becomes more safe and safe.

**Recommendation**

The owners of shops should pay attention to the need to transport and preserve milk and dairy products in special refrigerators at an appropriate temperature, especially in high temperature areas, due to increased activity of bacteria in these areas and the rapid damage of milk and dairy products.

Encourage scientific experiments and research to use natural substances as a safe preservative rather than the use of chemicals in the preservation of milk and dairy products, because of the dangerous chemicals caused by human diseases.

Contribute to the work of scientific research and joint studies with the relevant departments specialized in the production and processing of milk and its products in the colleges of

agriculture and agricultural and veterinary institutes to improve the specifications of milk and its products and to ensure the safety and health of the consumer.

## CONCLUSION

Human health, especially children, is related to milk and its products. The safety and quality of frankincense depends on the extent of knowledge of the natural or artificial components, contaminants or cheats and the relationship of these components to symptoms that differ from one person to another. Due to the contamination of milk and its products with pathogenic bacteria that can lead to food poisoning due to the failure to follow good health practices and the practice of good manufacturing by producers or diseases affecting human, which can be transmitted through dairy products such as Maltese fever, tuberculosis, typhoid, paratyphoid and amoebic dysentery. The person gets the disease if he is taking unpasteurized or spoiled milk and milk derivatives or through infected persons dealing with milk and its products or through the environment and its high cost of treatment. And because of the contamination of milk and its products with heavy metal toxic elements, especially lead.

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