



## **Bacterial Infections Associated with Contact Lenses User's**

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### **Keywords**

*Pseudomonas aeruginosa* was the most common bacterial type associated with infections..

### **Abstract**

A study on microbial contamination associated with contact lenses wearers was carried out on women in Amman city, Jordan., Some of them were asymptomatic and others were complaining of redness, tearing and itching. Isolation and identification of microbial infection associated with contact lens wearers by examination of the storage case solution. Collection of the samples Hundred samples of solution were collected from women of different Sources who Contact lenses: Ten used and four new contact lenses as well as Microtiter plate (MTP) were used as samples to observe Infection in this study. Sample from twenty new storage solution bottles were used as a control sample Isolation and identification of microorganisms: Macroscopical examination, Culture and Biochemical tests., Microscopic examination were done. The study was done during the period from March 10<sup>th</sup>,2021to April. 30<sup>th</sup> 2022. Samples were collected from (100) women distributed as follows: (housewife, pupil, student, staff and others). Their ages were ranging from 15-40 years. The most common age of contamination was found to be ranged between 20-25 years which accumulated for (58%) of all Eye' redness is found to be the most common symptom (30%) complained by the sampled women of this study. Isolates of *Pseudomonas aeruginosa*, *Staph. aureus*, *Staph. epidermidis*, *Listeria* and *Klebsiella* were obtained from the storage solutions of contact lenses. According to ELISA showed by Microtitre plate (MTP) Reader, *Pseudomonas aeruginosa* was the most common bacterial type associated with infections for the considered samples.

### **Article History**

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## **1. Introduction**

Around 100 million people (1.6 percent) of the world's population use contact lenses instead of glasses on a daily basis. Public health concerns related to contact lens use have taken on more significance as the contact lens business continues to expand. The most severe side effect of wearing contact lenses is infectious keratitis, which can cause corneal scarring or perforation and cause permanent vision loss. Wearing contacts has emerged as the biggest risk factor for corneal ulcers in people with previously healthy eyes [1]. The threats to public health posed by contact lenses are nevertheless a matter of concern given their extensive use for cosmetic and optical purposes. [2] Despite improvements in lens design

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and materials, bacterial infections and germs that create attachment pose a hazard to eyesight.

## **2. Materials and Methods**

Collection of the Samples 100 samples of lenses keeping solution were collected from women (different sources), each woman was interviewed and advised answer questionnaire form was completed, the data registered included age, occupation, residential area, type of wear, sharing wear, brand, saline type, cleaning scheme, duration of use, seasonal variation and signs.

Contact lenses Five used and two new contact lenses as well as Microtiter plate (MTP) were used as samples to observe adhesion formation in this study. Under aseptic condition and the use of sterile forceps and blade, each contact lens was divided into 6 equal pieces and laid on a Microtitre plate (MTP). After 24 hours of incubation, the samples (CL and MTP) rinsed with phosphate buffer saline (PBS), then colored by crystal violet for 15 minutes, then rinsed again with PBS and then inserted in Microtitre plate (MTP) to see if there is a adhesion formation in contrast the optical density formed on the Microtitre plate (MTP). Control sample Twenty new storage solution bottles were used as a control sample. The purpose of this sample was to detect whether or not the new storage solutions are already contaminated by any type of bacteria or other microorganisms.

## **3. Isolation and identification of microorganisms**

Bacteriological Investigations: Blood agar, MacConkey agar, and Chocolate agar were used for bacterial investigations on specimens, which were carried out aerobically and with 5% CO<sub>2</sub> at 37 °C for 24-48 hours. Macroscopic and microscopic criteria, as well as subsequent biochemical assays, were used to identify bacterial colonies[4]. Bacterial isolates were stored at -20 degrees Celsius in order to be employed subsequently in adhesion formation tests.(5-7) To ensure purity and viability, small amounts of the culture were subcultured on the BHI broth overnight at 37 °C. The majority of bacteria were grown in trypticase soy broth (TSB), which also contained 0.25 percent glucose. On a biotic surface Overnight, bacteria were cultured on TSB with 0.25 percent glucose at 37 °C. The contact lenses had been secured (8-12).

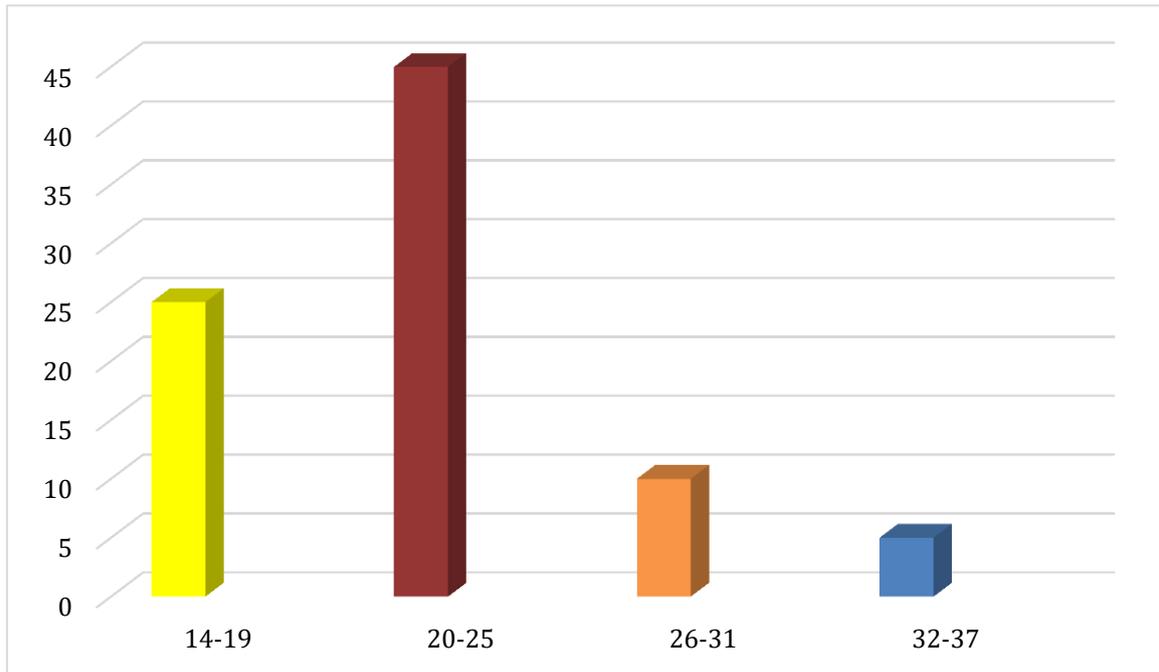
## **4. Result**

Such a percentage of contamination gives a clear idea about the prevalence of bacterial contamination among contact lenses wearers

### **4.1. Age of participants**

The age distribution of the females participated in this study is presented in figure 1.

**Figure 1.** Frequencies of age classes of the females participated in this study



This statistic demonstrates that the majority of female participants (75%) are in the 14–25 age group, which indicates that there was a substantial problem with participants' eyesight skills from a young age that would worsen if left untreated.

Only 7 of the 100 ladies who participated in the study were found to be uncontaminated; thus, 93 cases (93 percent) of the females practiced contact lens contamination. Such a high level of contamination provides a clear picture of the bacterial contamination rate among contact lens users.

**Table 1.** Frequencies and percentages of bacterial types.

Bacteria	Total	Percentage%
Non	7	7%
Pseudomonas auerogenes	40	40%
Staphylococcus epidermidis	6	6%
Klebsiella spp	18	18%
Staphylococcus aureus	7	7%
E.coli	20	20%
Lesteria	2	2%
Total	100	100%

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