

Seasonal Variation in Acute Dacriocystitis

Elif Ertan (✉ elif-ertan@hotmail.com)

Gaziosmanpasa Taksim Egitim ve Arastirma Hastanesi <https://orcid.org/0000-0001-5147-9814>

Sibel İnan

Afyonkarahisar Sağlık Bilimleri Üniversitesi Tıp Fakültesi: Afyonkarahisar Saglik Bilimleri Universitesi
Tip Fakultesi

İsmet Doğan

Afyonkarahisar Sağlık Bilimleri Üniversitesi: Afyonkarahisar Saglik Bilimleri Universitesi

Ümit Übeyt İnan

Park Hayat Hospital

Research Article

Keywords: Acute Dacryocystitis, Seasons, Gender

Posted Date: May 25th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-465457/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Objectives: Seasonal variation is possible in some medical conditions. Acute dacryocystitis is very disturbing clinical picture and can develop in any time of the year in patients with lacrimal duct obstruction. We aimed to investigate whether there is a seasonal relationship with the emergence of acute dacryocystitis.

Material and Methods: The files of the patients who applied to the ophthalmology outpatient clinic with the complaints of tearing and discharge for five years and diagnosed with acute dacryocystitis were analyzed retrospectively. Age, gender, date of occurrence of the complaints and the date of diagnosis of acute dacryocystitis were recorded. In order to determine the seasonal relationship, the data regarding the number of cases who applied every month of the year were analyzed statistically by Rayleigh test.

Results: The mean age of 60 patients (45 females, 15 males) included in the study was 54.70 ± 16.80 years. It was found that all patients were not equally likely to arrive at the hospital and the onset of their complaints throughout the months of the year ($p < 0.05$). The frequency of applications was higher between May and August.

Conclusion: There seems to be a seasonal relationship with the timing of the acute dacryocystitis. In our series, more acute dacryocystitis cases were encountered in the first spring-summer months. The reason for the increase of acute dacryocystitis cases in hot seasons of the year may be due to the increase in infectious agents in these seasons.

Introduction

Dacryocystitis is an acute suppurative inflammation of the lacrimal sac. Generally, the clinical picture develops as a result of infection in the lacrimal sac secondary to obstruction of the nasolacrimal duct. Pain, edema, and erythema are observed together with lacrimal sac distension (1, 2). Dacryocystitis can be congenital or acquired. Acquired dacryocystitis is frequently seen at the age of 40 and over. The cause of nasolacrimal duct obstruction is not fully known. It has been suggested that various factors such as the anatomical structure of the nasolacrimal canal (unilateral nasolacrimal obstruction with facial asymmetry or nasal septal deviation), endocrine changes, climatic factors, infections and smoking may play a role in the development of obstruction (1, 2, 3). In acute dacryocystitis, the agent is usually Gr (+) bacteria. These are usually streptococcal pneumococci and staphylococci (4).

Some medical diseases can be seen more in a certain season of the year. It has been wondered whether there is a seasonal effect in the occurrence time of some diseases. Seasonal change in the clinical symptoms of a disease indicates the environmental effects. Observing the seasonal effect also gives an idea about the pathogenesis. This information may also gain importance in the development of preventive health services. Seasonal changes have been reported in various infectious and surgical diseases (5, 6, 7). In this retrospective data review study, our aim was to examine the seasonal variation in acute dacryocystitis among the patients admitted to our hospital.

Material And Methods

Afyonkarahisar Health Sciences University Ethical Committee approved the study. In this study, the files of the patients were reviewed retrospectively after the approval of the ethics committee was conducted in accordance with the tenets of the Declaration of Helsinki. The files of the patients who applied to the eye outpatient clinic of the private hospital with complaints of tear and discharge and diagnosed with acute dacryocystitis were retrospectively analyzed. Best corrected visual acuity, intraocular pressure measurement and full slit-lamp examination were performed on all patients and the results were recorded. All patients were treated with topical and systemic antibiotics. Age, gender, date of occurrence of the complaints and the date of diagnosis of acute dacryocystitis were recorded. Especially, the time of onset of the patients' acute complaints was questioned and the month in which they occurred was recorded. Further analysis of the case series was not included as it was beyond the scope of this study.

Statistical analysis

Descriptive statistics used in the study were expressed as mean \pm standard deviation (SD), number (n) and percentage (%). SPSS 22 version was used in the analysis of the data. The value of $p < 0.05$ was taken as the statistical significance criterion. Data were analyzed by Rayleigh test.

Results

The mean age of 60 patients (45 females, 15 males) included in the study was 54.70 ± 16.80 . The mean age of the male patients was 43.67 ± 17.17 . The mean age of the female patients was 58.38 ± 15.14 . The ratio of female / male patients was 3/1. Rayleigh test analysis showed that patients' admission time to hospital was not evenly distributed over months. The number of patients who have symptoms and signs of acute dacryocystitis seen in each month of the year were significantly different ($p < 0.05$). The frequency of applications was particularly high between May and August. The distributions are shown in Fig. 1. The distribution of hospital admissions and the onset of complaints by months of the year was analyzed in terms of gender. It was determined that female patients' admission to the hospital and the onset of their complaints were not equally distributed over the months of the year. Difference in the number of female cases with acute dacryocystitis between months was statistically significant. ($p < 0.05$). The frequency of admission was higher between May and August. It was observed that male patients' admission to the hospital and the onset of their complaints were equally distributed over the months of the year and there was no statistical difference among the months ($p > 0.05$). The distribution of hospital admission and the onset of complaints of female and male patients by months of the year are shown separately in Figs. 2 and 3, respectively.

Discussion

In our study, when we analyzed the monthly distribution of the patients admitted to our hospital with acute dacryocystitis symptoms for five years, we obtained data indicating that the development of acute

dacryocystitis may have a seasonal relationship. In our series, the average age was younger than in western countries. The patients who have dacryocystitis are diagnosed generally at the age of 40 and over. However, acquired nasolacrimal duct obstruction has been diagnosed in the advanced age group (mean between 55.0 and 66.3 years) in developed countries (8). In our study, the mean age of the patients was 54.70 ± 16.80 years.

In the study conducted by Chung et al., the age of the cases was found to be 55.4 years, similar to our study. The number of female patients is higher than that of men. In this study, *S.Aeuris* was found to be the most frequently isolated microbiological agent in the culture results (9). When dacryocystitis cases are examined in terms of gender, while the distribution between genders is equal in congenital dacryocystitis cases, dacryocystitis seen in adulthood is more common in women. This ratio is observed as 80% women and 20% men. It has been reported in various studies that hormonal irregularities in women may cause narrowing of the nasolacrimal canal, causing dacryocystitis to be observed more frequently. In addition, the lower lacrimal passage is more irregular in women (10, 11). In our study, the rate of female patients in a series of 60 patients included in the study was 75%. Studies conducted in our country have reported the rate of women between 71.2% and 89.3% (12, 13).

Despite the differences in various economic and environmental factors, the fact that nasolacrimal obstruction occurs more frequently in women and in the postmenopausal period suggests that anatomical and hormonal factors play an important role (14, 15). When nasolacrimal duct obstruction develops, patients usually develop a low-grade chronic dacryocystitis, which exacerbates from time to time. Patients usually live with these symptoms of chronic dacryocystitis until they undergo surgery for nasolacrimal duct obstruction. The patients have symptoms of permanent epiphora, purulent discharge due to recurrent conjunctivitis from time to time. These cases develop acute dacryocystitis due to acute inflammation of the lacrimal sac at a certain time of the year. When acute dacryocystitis develops, a very disturbing clinical picture with subacute onset of pain, tense swelling at medial canthus and mild to intense preseptal cellulitis develops in these patients and systemic antibiotic treatment is often required. Some patients are persuaded to undergo surgery after experiencing acute dacryocystitis. It is very difficult to predict when a picture of acute dacryocystitis will develop in these patients. A seasonal relationship with the time of onset of acute dacryocystitis may indicate the influence of other environmental factors. Whether there is a seasonal relationship with acute dacryocystitis has rarely been investigated in the literature.

In an epidemiological study on acute dacryocystitis, the seasonal variation analysis of acute dacryocystitis cases showed that dacryocystitis was relatively more common during warm periods, but it was not statistically significant. Seasonal distribution analysis was not performed between the genders (16).

In our study, it was observed that there was an increase in the frequency of acute dacryocystitis during the hot season among all patients. This difference was statistically significant among women ($p < 0.05$).

No significant difference was found between the male patients in terms of seasonal distribution by months of the year ($p > 0.05$).

Badhu et al. showed that dacryocystitis was observed at a higher rate in patients with nasolacrimal duct obstruction living in the plains compared to those living in the mountainous region from their sociodemographic data(17). This geographic data may show that temperature is a risk factor and is consistent with the results of our study. In a retrospective study on the sociodemographic data by Nemet et al, it was found that 36.3% of the patients with nasolacrimal obstruction had a low socioeconomic level, but this rate was not found to be significantly different from the control group (18). In our study, no evaluation could be made regarding the socioeconomic level or geographical place.

Our study has some limitations. The small number of patients is one of them. Second limitation may be the lack of microbiological culture data to analyze microbiological factors causing dacryocystitis according to seasons. Third, anatomical variations of the patients were not examined by endoscopic examination. In our study, it was not attempted to reach these data accurately retrospectively, but rather we exerted afford to find data about when the patients developed symptoms. More detailed results can be obtained by examining these features in larger case series.

The seasonal relationship between the time of occurrence of acute dacryocystitis cases and the fact that there is an increase in the warm seasons especially in female patients but the absence of seasonal relationship in male patients suggests that different factors may play a role in the etiology of acute dacryocystitis. Our study should be investigated with further studies, especially considering the small sample size of male patients. If this relationship is validated by further studies, patients with chronic epiphora or chronic dacryocystitis can be informed and warned about the seasonal risk factor of this very disturbing clinical picture, and thus disease management can be done more accurately.

In conclusion, we considered that the increase in frequency of acute dacryocystitis cases in summer seasons of the year may be due to the change in lacrimal sac flora or increase in infectious agents in these seasons. Further studies are warranted to demonstrate the seasonal relationship of development of acute dacryocystitis.

Declarations

Conflict of Interest:

No conflict of interest was declared by the author.

Financial Disclosure:

The author declared that this study has received no financial support

References

1. Bartley GB. Acquired lacrimal drainage obstruction: an etiologic classification system, case reports, and a review of the literature. Part 1. Ophthalmic Plast Reconstr Surg. 1992;8(4):237-42.
2. Linberg JV, McCormick SA. Primary acquired nasolacrimal duct obstruction. A clinicopathologic report and biopsy technique. Ophthalmology. 1986 Aug;93(8):1055-63.
3. Lee JS, Lee H, Kim JW, Chang M, Park M, Baek S. Association of facial asymmetry and nasal septal deviation in acquired nasolacrimal duct obstruction in East Asians. J Craniofac Surg. 2013 Sep;24(5):1544-8.
4. Mills DM, Bodman MG, Meyer DR, Morton AD 3rd; ASOPRS Dacryocystitis Study Group. The microbiologic spectrum of dacryocystitis: a national study of acute versus chronic infection. Ophthalmic Plast Reconstr Surg. 2007 Jul-Aug;23(4):302-6.
5. Bertelmann T, Cronauer M, Stoffelns B, Sekundo W. Saisonale Variation des Auftretens rhegmatogener Netzhautablösungen zu Beginn des 21. Jahrhunderts. Eigene Ergebnisse und Übersicht über die Literatur [Seasonal variation in the occurrence of rhegmatogenous retinal detachment at the beginning of the 21st century. Study results and literature review]. Ophthalmologe. 2011 Dec;108(12):1155-63
6. Qassim A, Viki M, Ng SK, Jersmann H, Casson RJ. Climate and season: the effects on ophthalmic diseases. Clin Exp Ophthalmol. 2017 May;45(4):385-392.
7. Gorski M, Genis A, Yushvayev S, Awwad A, Lazzaro DR. Seasonal Variation in the Presentation of Infectious Keratitis. Eye Contact Lens. 2016 Sep;42(5):295-7.
8. Tucker N, Chow D, Stockl F, Codère F, Burnier M. Clinically suspected primary acquired nasolacrimal duct obstruction: clinicopathologic review of 150 patients. Ophthalmology. 1997 Nov;104(11):1882-6
9. Chung SY, Rafailov L, Turbin RE, Langer PD. The microbiologic profile of dacryocystitis. Orbit. 2019 Feb;38(1):72-78.
10. Fraunfelder R. Current Ocular Therapy. Section 26: Lacrimal system, 2000;523- 534.
11. Jonathan J, Yanoff M, Duker SJ. Ophthalmology. Section 7:Orbital and lacrimal gland. Chapter 17: The lacrimal drainage system. Spain, Mosby comp 2004;171-178.
12. Altan-Yaycioglu R, Canan H, Sizmaz S, Bal N, Pelit A, Akova YA. Nasolacrimal duct obstruction: clinicopathologic analysis of 205 cases. Orbit. 2010 Oct;29(5):254-8.
13. Kaynak P, Ozturker C, Yazgan S, Karabulut GO, Akar S, Demirok A, Yilmaz OF. Transcanalicular diode laser assisted dacryocystorhinostomy in primary acquired nasolacrimal duct obstruction: 2-year follow up. Ophthalmic Plast Reconstr Surg. 2014 Jan-Feb;30(1):28-33.
14. Roussos J, Bouzas A. Essai d'explication par des facteurs hormonaux de la grande fréquence d'apparition de la dacryocystite chronique chez les femmes plutot que chez les hommes [Attempted explanation with hormonal factors of the greater occurrence of chronic dacryocystitis in women than in men]. Bull Mem Soc Fr Ophtalmol. 1973;86(0):96-9. French.

15. Groessl SA, Sires BS, Lemke BN. An anatomical basis for primary acquired nasolacrimal duct obstruction. Arch Ophthalmol. 1997 Jan;115(1):71-4
16. Ivaniševic M, Bojic L, Lešin M, Žuljan I, Bucan K, Kovacic Ž. Primary acquired nasolacrimal duct obstruction: epidemiological analysis of 91 patients. Med Jad 2007; 37: 37-41.
17. Badhu B, Dulal S, Kumar S, Thakur SK, Sood A, Das H. Epidemiology of chronic dacryocystitis and success rate of external dacryocystorhinostomy in Nepal. Orbit. 2005 Jun;24(2):79-82.
18. Nemet AY, Vinker S. Associated morbidity of nasolacrimal duct obstruction—a large community based case-control study. Graefes Arch Clin Exp Ophthalmol. 2014 Jan;252(1):125-30.

Figures

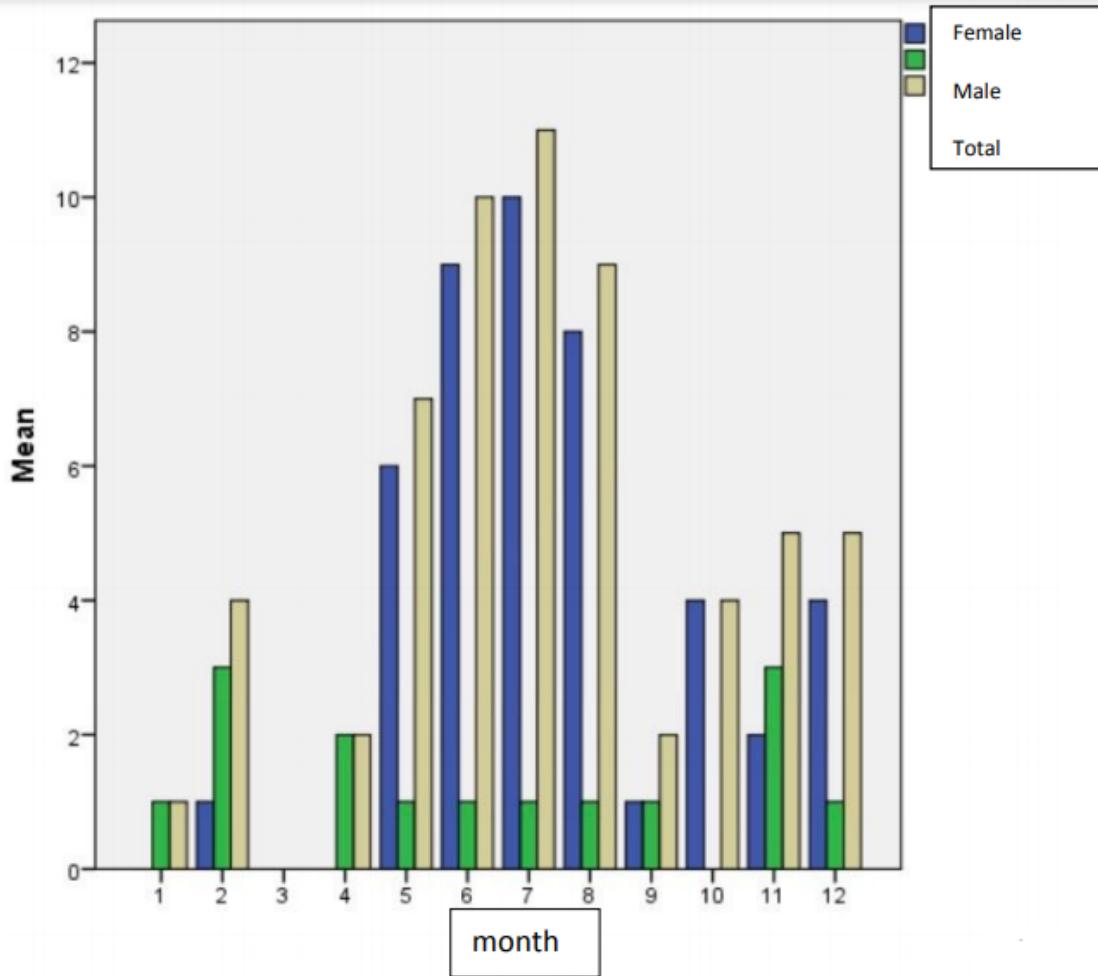


Figure 1

The frequency of applications,total

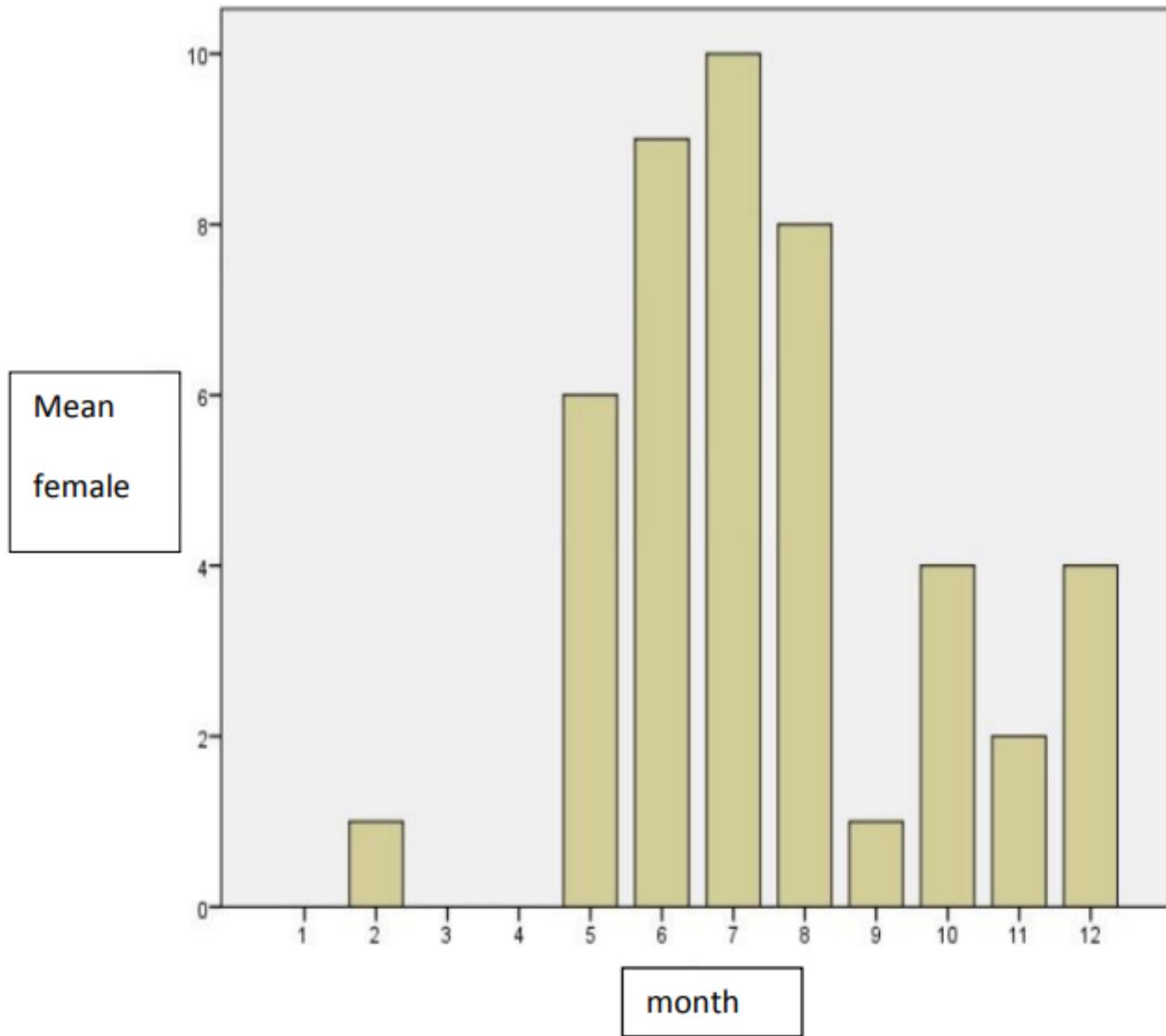


Figure 2

The frequency of applications, female

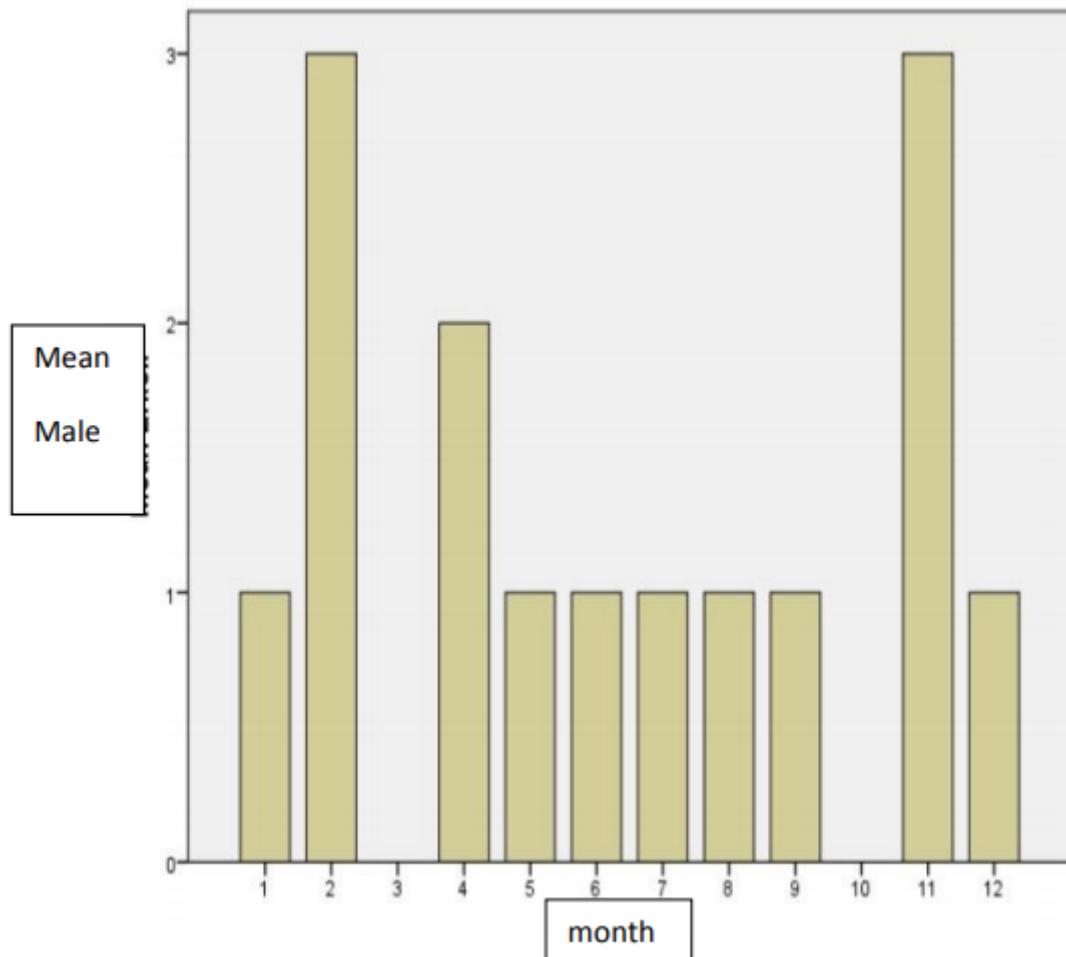


Figure 3

The frequency of applications, male