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Al-Quds University

Causes of Visual Impairment and Blindness amongst
Patients Attending a Community Mobile Clinic in the
West Bank

By:
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M.Sc. Thesis

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Causes of Visual Impairment and Blindness amongst
Patients Attending a Community Mobile Clinic in the
West Bank.

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A thesis submitted in partial fulfillment of requirements
for the Master of Public Health (Health Management).

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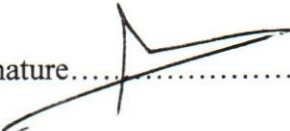
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Causes of Visual Impairment and Blindness amongst Patients Attending a Community
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DECLARATION

I certify that this thesis submitted for the degree of Master in Public Health is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part) has not been submitted for a higher Degree to any other university or institution

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ABSTRACT

This study was initiated to examine causes of visual impairment and blindness amongst patients attending a community mobile outreach clinic run by the St John Eye Hospital- Jerusalem.

A quantitative approach was used to collect data on patients' ocular health, level of knowledge and accessibility to eye care and demographic characteristics.

The target population consisted of 301 subjects who attended six randomly selected outreach mobile clinics. In total 235 patients met the selection criteria and formed the study sample. In addition to data collected from medical examination, a structured interview with the client was administered to collect relevant data.

The results of this study clearly indicate that un-operated cataract remains the main cause of visual impairment and blindness in Palestine. Poor accessibility to eye services is also evident and mainly due to financial hardship and unavailability of the service in the patients' area of residence. The elderly population appears to suffer most as many blinding eye diseases affect this age group.

This study highlights the need for prompt intervention both at an institutional level (St John Eye Hospital) and a national level to address the mounting need for an essential eye care especially in the rural and remote areas.

المخلص

قامت هذه الدراسة لفحص أسباب ضعف البصر والعمى عند المرضى المراجعين للعيادات المتنقلة للعيون التابعة لمستشفى سانت جون - القدس .

استخدم أسلوب البحث الكمي لجميع المعلومات عن الصحة البصرية ، مقدار المعرفة وسهولة الوصول إلى الخدمات الصحية للعناية بأمراض العيون ، وكذلك جمعت المعلومات عن الصفات الديموغرافية للمرضى .

الفئة المستهدفة من الدراسة تكونت من ٣٠١ شخصا الذين عوينا في ٦ عيادات متنقلة اختيرت عشوائيا . ٢٣٥ مريض استوفوا شروط الاختيار وكونوا عينة الدراسة . بالإضافة إلى جمع المعلومات الطبية ، أجريت مقابلات منظمة مع الأفراد لجمع المعلومات المنشودة .

نتائج هذه الدراسة بينت بوضوح أن مرض الساد ما زال يشكل السبب الرئيسي لضعف البصر والعمى في فلسطين .

صعوبة الوصول إلى الخدمات الصحية للعيون كانت واضحة في هذه الدراسة ويعود ذلك لصعوبة الأحوال المادية وكذلك عدم توفر الخدمات الصحية لرعاية العيون في منطقة سكن المرضى . وتبين من الدراسة أن فئة كبار السن هي الفئة الأكثر تضررا وذلك بسبب شيوع أمراض العيون في هذه الفئة العمرية .

هذه الدراسة توضح بجلاء الحاجة إلى التدخل العاجل على مستوى المؤسسات الطبية (مستشفى سانت جون للعيون) وكذلك على المستوى الوطني لسد الحاجات المتزايدة لمرضى العيون ، وخاصة في المناطق الريفية والناحية .

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ABBREVIATIONS

LASER: Light amplification by stimulated emission of radiation.

NGO: Non governmental organization

UNRWA: United Nations Relief and Work Agency

PA: Palestinian Authority

SJEH: St John Eye Hospital

WHO: World Health Organization.

Chapter One

INTRODUCTION

St John Eye Hospital in Jerusalem was founded in 1882 in order to provide eye care to people of the Holy Land. Since then the hospital has been the main provider for primary, secondary and tertiary eye care for Palestinians living in the West Bank, Gaza Strip and East Jerusalem.

On average, the hospital treats 40000 patients every year and carries out around 4000 major eye operations, (St John Eye Hospital, 2001).

The hospital's Outreach Mobile Clinic was established in 1980 to provide primary eye care to Palestinians living in the West Bank and Gaza Strip. On average, around 4000 patients are seen through this clinic. However, over the last two years this mobile clinic has been the main provider for eye care for many Palestinians who are unable to reach the hospital. The clinic is held twice weekly in areas of perceived needs in the north, middle and south of the West Bank.

Patients attend the clinic with various eye disorders ranging from simple allergic conjunctivitis to intra ocular foreign bodies resulting from plastic or rubber bullets.

Problem Statement

According to the World Health Organization (2000), there are around 150 million people with significant visual disability of whom almost 38 million are blind. It also indicated that the majority of these exist in developing countries. Furthermore, it has been argued that almost 80% of these cases of blindness are due to avoidable and or curable eye conditions.

In Palestine, in the last 20 years there have been no studies that examined such issues in details. However, the Palestinian Population Census (1997) indicated that there were 6727 people with visual disabilities. This places the prevalence of visual disability in Palestine at around 0.26, far lower than even industrialized countries. This may reflect shortcomings in the organization and categorization of visual impairment by the census. One therefore can not rely on such data estimates on the determinations and prevalence of blindness and visual impairment in Palestine.

Loosing sight is arguably the most devastating experience that can happen to a human being. This argument is particularly valid if such conditions are rapid in onset and that these could have been prevented. At a national level blindness and visual impairment present serious and considerable economic effects. In addition to the loss of the individual functional abilities and self esteem, visual disability causes loss of productivity, income and increased social and economic dependence.

Knowledge of the leading causes of blindness and visual impairment amongst patients would highlight any present needs and therefore enable health care providers such as the St John Eye Hospital (SJEH) and the Palestinian Health Authority to channel resources and target those who are at high risk. Such findings will also inform any future plans for expansion and decentralization of services provided by the SJEH.

Objectives:

The study sets out to achieve the following objectives:

1. Establish the over all prevalence of blindness and visual impairment amongst patients seen on the community mobile clinic during a period of three months.
2. Identify the main causes of blindness and visual impairment amongst this group of patients.
3. Identify sub groups in the target population who are in need for high priority action.
4. Examine patients' knowledge of the causes of their visual problems,
5. Determine patients' level of accessibility to ophthalmic health service in their localities.

Feasibility of the study:

It was envisaged that this research would receive both financial and moral support from the hospital administration. The researcher had a particular interest in this field and therefore he was self motivated to accomplish the study in the time frame allowed. In addition, the researcher has extensive ophthalmic nursing experience and knowledge which again facilitated this study.

Ethically, the research by no means harmed any patient either physically or psychologically. With regard to participants, it was appropriate to suggest that a large number of participants were available, since as many as fifty patients are seen on each outreach clinic.

Assumptions

It was assumed that this study will receive approval from the hospital's ethical and research committee. In addition, it was anticipated that cooperation from various professional groups (ophthalmologists, nurses and technicians) will be granted as such cooperation was vital for the completion of this study. The researcher anticipated that a sufficient number of patients will consent to participate in this study. As patients do not have to travel to the base hospital, it was believed that sufficient number of patients will attend such clinics.

Limitation of the study:

As this study was conducted on patients seen on a community mobile clinic, therefore generalization from this study could only be made about such patients. Despite the fact the hospital is the main provider for ophthalmic care in the West Bank, yet in order to be able to generalize to the total population, a more comprehensive study is needed. Such study requires extensive funding and a long time period.

One also needs to emphasize that many patients who are visually impaired or blind may not attend the clinic as they may have reached an advanced pathological stage where medical intervention may not be advisable. In addition, those patients have poor vision and therefore, it may be difficult for them to walk unless they have family members who would accompany them to attend such clinics. Therefore such groups may be underrepresented in both hospital and community clinics.

Time frame

A six month time frame was formulated to complete this study. However, due to the unpredictability in the political situation, adhering to such time frame proved to be difficult. At any rate, the following table represents the time frame of the study:

Table one: Time Table for the Completion of the Study.

Date	Activity
1.9 -1.10.2002	Problem identification, writing objectives and literature review
2.10-1.11.2002	Deciding and formulating methodology and questionnaire
1.11-1.12.2202	Revising proposal and approaching hospital ethical committee
1.1-1.4.2003	Pilot study, data collection and entry
1.4-20.5/2003	Data analysis, write up and printing out study for defense

Budget

The cost of the study is detailed in table two.

Table 2: Cost of the study.

Activity /item	Cost in US\$
Literature review	50
Cost of stationary (questionnaire, photocopying, papers and computers)	150
Cost of office space and supplies	150
Salaries for those colleting data	500
Secretarial support	100
Cost of the use of special equipment such as vision charts and slit lamp	200
Cost of final report	100
Total	1150

Definition of terms *

Amblyopia: reduced vision usually due to interference with eye development.

Blindness: visual acuity of less than 3/60 or corresponding visual field loss in the better eye with best correction.

Degenerative eye disease: degeneration of eye tissues due to either disease process or aging.

Diabetic retinopathy: pathological changes in the retinal blood supply due to raised blood glucose level.

Cataract: opacity of the lens.

Cataractogenic: causes cataract.

Glaucoma: an eye disease characterized by abnormally increased intra ocular pressure.

Congenital eye disease: an eye condition that is manifested at birth or within six months of birth.

Congenital glaucoma: glaucoma that it manifested either at birth or during the first 6 months of life.

Conjunctiva: mucus membrane that lines the posterior aspects of the eyelids and the anterior sclera.

Cornea: the transparent portion of the outer coat of the eye.

Mobile Outreach Clinic: A medical team travels to examine and treat eye patients in remote and rural areas in Palestine.

Fundoscopy: examination of the posterior segment of the human eye.

Slit lamp: a microscopic device used to examine ocular tissues.

St John Eye Hospital: a charitable hospital which was established in East Jerusalem in 1882 to provide eye care to inhabitants of the holy land.

Refractive error: an optical defect that prevents light rays being brought to a single focus on the retina.

Retina: the inner most layer of the eye coat responsible for picking up light impulses and transmit them to the brain where seeing takes place.

Trachoma: a serious form of inflammatory eye disease affecting the conjunctiva and the cornea.

Visual acuity: the acuteness of vision.

Visual impairment: visual acuity of less than 6/18 but equal to or better than 3/60 in the better eye with best possible correction.

* All the above definitions were adopted from Kanski (1997)

Chapter Two:

Ophthalmic Health Care in Palestine:

Introduction:

Health care in Palestine is unique in many aspects. Such uniqueness can be highlighted in that the health system is a mixture of public, non government, UNRWA and private with a developing governmental health insurance system.

In addition, until few years ago, the Palestinian health system was under Israeli occupation control which resulted in poor provision of primary, secondary and tertiary care. Since the Palestinian National Authority took over control of the health system, there have been many achievements at all levels.

The aim of this chapter is to examine ophthalmic health services in the Palestinian territories. The discussion will aim to explore the various aspects of the care and the providers of such care. Statistics from the Palestinian Health Authority and St John Eye Hospital in Jerusalem will be utilized to support discussion and arguments.

Eye care in the West Bank and Gaza Strip:

Ophthalmic health care appears to have been neglected by the Palestinian Health Authority. "Eye care is neglected in the Palestinian's health care system and much of the blindness that affects the Palestinian population can be prevented" (Union of the Medical Relief Committees (2001), page 1.). The few services that do exist are often two expensive (private sector) which leaves many with no affordable ophthalmic care that they are in very much need for.

Governmental services in this field are almost none existent especially in the West Bank. There is no governmental national eye care plan program that carries out eye checks especially for those who are at high risk of developing preventable or curable eye diseases such as the very young, diabetics and the elderly. This means that a simple eye condition such as a refractive error can go without detection in school children leading to incurable and or uncorrectable eye conditions in the future.

However, in this field there are a number of NGOs who carry out school screening checks. Examining this service closer reveals that these are fragmented efforts and often carried out by improperly qualified health personal or merely social workers.

In addition these NGOs appear to be working in competition with each other causing duplication of work.

According to the Palestinian Ministry of Health (1999) there are no ophthalmic beds in the governmental hospitals in the West Bank. However, since this report was published there have been new developments where four ophthalmic beds were opened at Rafidia Governmental Hospital in Nablus. This unit carries out primary eye care with limited surgical interventions.

However, the situation is slightly different in the Gaza Strip as there are (according to the Palestinian Ministry of Health, 1999) 31 ophthalmic beds in governmental hospitals. Although there are no surgical beds, but the St John Eye Hospital Clinic in Gaza carries out day case surgery and provides primary and limited secondary eye care in Gaza city. As far as it is documented in the literature, there are no other ophthalmic units or surgical beds in Gaza Strip.

As a result, it seems that the private sector has grown rapidly in this field especially in the West Bank. There are currently 2 ophthalmic beds in Jenin and 10 ophthalmic beds in Ramallah, (Ministry of Health, 1999). Please refer to table three for more details about the providers of ophthalmic health care in Palestine.

However, since publishing this report by the Ministry of Health, there have been further ophthalmic developments in the private sector in Bethlehem and Hebron. A new unit was opened at Al Meezan Private Hospital in Hebron and a surgical unit was also established at the Arab Association in Bethlehem, (St John Eye Hospital, 2001). (Please refer to table three for more details).

Table three: Ophthalmic Beds Available in Palestine and the Provider of the Service.

Area	Number of ophthalmic beds	Provider of service.
Gaza strip	31 day case surgery.	MOH and St. John Eye Hospital
West Bank		
Jenin	2	Private(Al Shifa'a hospital)
Nablus	4	MOH (Rafedia Hospital)
Tulkarim	0	
Qalqelia	0	
Ramallah	10	Private (Arab care, Khalid Hospital)
Bethlehem	Day case surgery	Private (Arab Association)
Hebron	Day case surgery	Private (Al Meezan Hospital)
Jerusalem	74	St John Eye Hospital
Total	121 beds for Palestine	

Reference: MOH (2001) and St John Eye Hospital Statistics (2001).

The lack of ophthalmic human resources was highlighted in the Ministry of Health Strategic Health Plan (1999) which indicated that there are 27 ophthalmologists practicing in the West Bank, East Jerusalem and Gaza Strip. This makes the Ophthalmologists -population ratio 1:107,060

In its national health plan, the ministry of health aims to reach 67 ophthalmologists and the ratio to reach 1:50,000 by the year 2003. It is clear that this target has not been achieved. This may be due partly to the political unrest over the past two and a half years which allowed little or no leeway for development or meaningful planning.

In addition the Union of Medical Relief Committees Annual Report (2001) indicates that there are no established governmental bodies or NGOs that run rehabilitation centers for the visually impaired. The service of ophthalmic rehabilitation is partly carried out by the Palestinian Authority Social Services Department. However, this mainly involves mobility rehabilitation and rehabilitation emphasizing home visual environment.

From this discussion it has become clear that the St John Eye Hospital is the main provider for primary, secondary and tertiary care to most Palestinians living the West Bank and East Jerusalem.

St John Eye Hospital:

The St John Eye Hospital was established in 1882 in East Jerusalem to provide eye care to the inhabitants of the holy land.

Mission of the hospital:

St John eye hospital is a centre of excellence providing care of high quality to the people of the holy land irrespective of race, creed, social class or ability to pay, (St John Eye Hospital, 2001). The hospital is the only unit providing comprehensive care to the patient population of over three million and to a standard comparable with equivalent-sized hospital elsewhere in the world.

Relevance of the hospital:

Elder (1993) points out that ophthalmic disease is prevalent amongst all countries of the Middle East and the Palestinian population of East Jerusalem, West Bank and Gaza Strip suffer from rates of blindness significantly higher than those found in the developed world. There is a high incidence of cataract, corneal diseases, congenital eye disease and diabetes. Unfortunately there is no reliable data to support such arguments due to the lack of medical research in this field.

Target population of the hospital:

The hospital is the major unit providing eye care to the residents of the West Bank, Gaza and East Jerusalem. "The ophthalmic morbidity of this population of over three million is considerable" St John Eye Hospital Strategic Plan (2000-2005) (page 19).

Although the hospital is a Christian organization, it is non sectarian. The outpatient and the hospital services are available to all. It is essentially a subsidized fee-paying establishment but those who are unable to afford charges receive exemption. According to the hospital statistics (2001) approximately 54,000 patients are seen annually and as many as 5400 eye surgeries are performed each year.

Patients' accessibility:

As the St John Eye Hospital is situated in the occupied East Jerusalem, patients' accessibility has suffered a great deal during the past two and a half years.

The Israeli authority imposes strict internal and external boarder closures that have severely restricted movement of patients especially from the extreme north (Jenin) and south (Gaza).

Prior to the second Intifada regular flow of patients from Gaza Strip was maintained. Table four demonstrates the decline in the number of patients attending the hospital especially from Gaza strip.

Table Four: Percentage of Patients (According to Their Place of Residence) Attending the SJEH.

Year	% of patients	Year	% of patients
1997		2001	
West Bank	67%		77%
Gaza strip	13.7%		0.5%
Jerusalem	19.3%		22.5%

Source: St John Eye Hospital Statistics (2001).

It is very clear that patients from the Gaza Strip face major difficulties to attend the hospital. However, the St John eye hospital clinic was established in response to the high need for eye care in Gaza.

As for the West Bank the Outreach Mobile Clinic endeavors to meet part of the mounting need particularly in the remote areas.

Ophthalmic services provided by the hospital

The eye hospital in Jerusalem provides primary, secondary and tertiary care in the following fields of ophthalmology:

- * Anterior segment including corneal, cataract and glaucoma.
- * Posterior segment including vitreo- retinal surgery.
- * Pediatric medical and surgical services.

* Primary eye care including the outreach mobile clinic.

* Medical diabetic services.

Educational services at the hospital:

The Sir Stephen Miller School of Nursing was established in 1980 to provide both general and ophthalmic nurse education. Currently the school only offers post registration specialist ophthalmic nurse training to qualified general nurses. This program is one academic year and is accredited by Thames Valley University in London. In addition, the nursing school is responsible for continuing and in-service training at the hospital.

Medical ophthalmic training was launched in 1991. It aims to train general doctors to become ophthalmologists. This program consists of two years Diploma training at the hospital. Those who complete the program are able to complete an additional two years either in Jordan or England to be able to practice as qualified ophthalmologists.

Financial and human resources at the hospital:

As indicated in appendix 2, the hospital is mainly funded by donations from abroad. The hospital is part of the St John Organization which is a charitable organization based in the United Kingdom where the Board of Directors raises funds for the hospital. Being a charitable organization with subsidized fees and exemption from payment for many needy Palestinians, the hospital activities generate less than 20% of the total cost needed for the running of the hospital.

Examining the hospital financial statement for the year 2000 reveals that more than 50% of the hospital income is from donations and gifts. This may highlight a potential problem as this high percentage must be maintained for the hospital to be able to function and develop.

According to the hospital financial department, 80% of the hospital expenses go to cover salary costs for 169 employees. These employees are divided into medical, nursing, management and support staff.

The Chief Executive Officer is head of the three hospital directorates:

1. Medical directorate which includes chief medical officer, ophthalmologists, anesthetists, medical trainees, orthoptists and medical technicians.
2. Nursing directorate which consists of the nursing director, nursing tutors, senior and junior registered nurses, practical nurses and ophthalmic nurses.
3. Directorate of general services which consists of a general manger, financial staff, record office and other support staff. (Please refer to the staff establishment in appendix 3).

The Outreach Mobile Clinic of the SJEH.

The outreach service was established in 1980 in order to provide primary eye care to the Palestinians living in remote areas in the West Bank and Gaza Strip. The service is provided free of charge. The outreach team consists of an ophthalmologist, nurse practitioner and two other nurses in addition to a driver and an optometrist. The clinic is held twice weekly: one day the mobile clinic visits the north and the other day the south of the West Bank with occasional cover for Ramallah area.

The team carries out vision screening and primary ocular eye examination and treatment of minor eye conditions. Those who need further treatment and or surgery are referred to the base hospital. (Please refer to appendix 4 for more information and statistics).

Summary

When the Palestinian National Authority inherited the health care system of its Palestinian people from Israel, there were virtually no governmental eye care services whatsoever and any primary care which existed was run by the NGOs.

Although there have been concentrated efforts by the Palestinian Authority to introduce government primary care clinics, private

Ophthalmic care remains the only option for patients other than St. John Eye Hospital. Since a large percentage of the population are

below the official poverty line, they are unable to afford such private services.

Chapter Three

A) Literature Review

The aim of this literature review is to present and critically analyze available and relevant literature on both causes of blindness and visual impairment. The researcher will present literature on the world blindness and visual disability. The trends in neighboring countries will also be presented and addressed. The researcher will review the literature presented by the World Health Organization and other researches in the field of ophthalmology. As for Palestine the writer was not able to locate any relevant studies which had examined this issue in details. However, the Palestinian Population Census (1997) will be widely discussed as a source of information.

Blindness and visual impairment can result from a number of infections and non-communicable diseases as well as injury. Depending on the cause, up to 80% of blindness and serious visual loss could be either treated or prevented, WHO (2002). The main causes of avoidable blindness and serious visual impairment worldwide include cataract, trachoma and glaucoma. According to the WHO (2002) cataract accounts for 16 million cases of blindness worldwide and in most countries of Africa and Asia it accounts for approximately half of all blindness.

A cataract results from a change of the transparency of the normal crystalline lens in the eye. When the lens becomes opaque, it prevents the light from entering the eye. As a result gradual loss of vision develops with eventual blindness.

Trachoma is one of the oldest infectious diseases known to mankind. According to the WHO (2002) worldwide, trachoma is responsible for 15% of the world's blindness. Glaucoma is considered to be the third largest cause of blindness worldwide after cataract and trachoma and is responsible for an estimated 5.2 million cases of blindness. WHO (2002) put the total number of suspected cases of glaucoma at around 105 million of which more than 80 million in the developing world.

World blindness and visual disability

The WHO (Task for the Prevention of Blindness) (1997) has divided the world into three groups:

1. Least developed countries where blindness prevalence is around 1% which reflects the presence of communicable diseases such as trachoma and Vitamin A deficiency. This situation is further complicated by scarce resources.
2. Countries at intermediate stage of development: in these countries most communicable diseases have been controlled. The most common cause of blindness is cataract with blindness prevalence of 0.5%. It would be appropriate to suggest that Palestine lies in this category of countries. However, this assumption can not be supported by reliable and available data.
3. Industrialized countries where the main causes of blindness are congenital, hereditary and metabolic degenerative diseases. Blindness prevalence is between 0.2-0.3 percent.

It was also indicated by the WHO (1999) that more than 90% of the world blindness is in developing countries. The most recent data presented on blindness by the WHO (1999) indicated that the number of those who are blind worldwide is almost 38 million. According to Therefore, Negrel, Pararajasegaran and Dadzie(1996) there are three people with visual impairment for each one blind person. This statement was emphasized by the WHO (1999) that worldwide there are around 150 million people with visual impairment and blindness.

Thylefors, et al (1996) point out that the main cause of blindness and low vision is still cataract and the present proportion being around 40-50% of global blindness. The second most common cause is trachoma with approximately 15% followed by glaucoma at 13.5%.

It was indicated by the World Bank (1993) that the world blindness prevalence is as indicated in table five.

Table Five: Prevalence of Blindness Worldwide as Indicated by the World Bank (1993).

Region	Prevalence of blindness
Established market economy	0.3%
Russia and eastern Europe	0.3%
India	0.8%
China	0.6%
South east area and east Asia	1%
Sub Sahara Africa	1.4%
Latin America and the Caribbean	0.5%
Middle eastern countries	0.7%

A study carried out by Livingston, McCarthy and Taylor (1997) pointed out that income, age, health insurance, level of education and employment were all significant factors in visual impairment amongst Australian subjects. They found that visual impairment is most likely to affect the elderly and those living in poor neighborhoods with no private medical insurance.

In addition Thylefors et al (1996) mentioned that age is a significant factor influencing blindness as 58% of world blind people are over the age of 60 years and only 3.8% are aged 0-14 years.

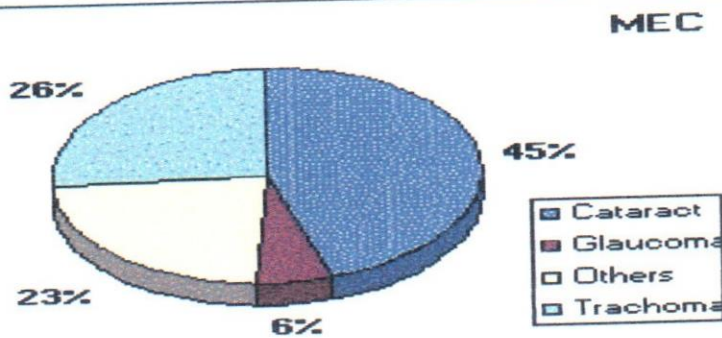
Middle Eastern and neighboring countries

Al- Bdour, Al Till and Abu Khader (2002) carried out a research at the department of ophthalmology at the Jordanian university to assess causes of blindness amongst Jordanian adults aged 20 years and over who attended a big general ophthalmic clinic. This study revealed that cataract, diabetes and ocular trauma were the main causes of blindness among 373 subjects.

Hod, Corcia, Yassur and Geyyer (2002) carried out a study to determine the causes of blindness in Israel. They concluded that the leading causes of blindness in Israel are Glaucoma (13%), macular degeneration (12%) and diabetes mellitus (11%).

The WHO (2002) indicated that in general the leading causes of blindness in the Middle East are cataract, trachoma and glaucoma presented in graph one

Graph one: Prevalence of Blindness in the Middle East. WHO (2002).



It seems that even in the more economically developed countries in the Middle East; cataract is the leading cause of blindness. This was emphasized by Hadaka, Mahoud, Negrel and Riyami (2002) who investigated the prevalence and causes of blindness in the Sultanate of Oman. This research concluded that the major causes of blindness were un-operated cataract (30.5%) trachoma (23.7%) and glaucoma (11.5%).

The picture seems almost identical in neighboring Lebanon. A national survey of blindness and lower vision in Lebanon was carried out in (1997) revealed that the prevalence of blindness in Lebanon was 0.6% and that of low vision 3.9%. This survey revealed that the major causes of blindness were cataract 41.3% and uncorrected large refractive errors 12.6%.

Table six presents estimates of prevalence of blindness in eastern Mediterranean countries as presented by Tabbara (2001).

Table six: Prevalence of Blindness in Eastern Mediterranean Counties as Presented by Tabbara (2001).

Causes of blindness	Number blind	%
Cataract	1439895	45.2
Trachoma	818702	25
Glaucoma	181580	5.7
Others	745433	23.4
Total	31856	100

Blindness and visual impairment in Palestine

Golychew (1990) investigated 1427 Palestinian subjects in the West Bank and Gaza and concluded that marriages between relatives appear to play an essential role in the development of congenital eye diseases.

Based on the WHO report of 2.5% prevalence of low vision rates in East Mediterranean region in 1998 it is appropriate to estimate that for Palestine the rate would be around this figure if not higher due to the increased number of eye injuries related to the occupation.

Intifada related eye injuries:

According to Johnson, Minassian and Weale (1997) worldwide there are 19 million cases of monocular blindness due to injury.

Eye injuries vary from simple superficial foreign bodies to more complicated and penetrating injuries with devastating consequences.

According to Elder (1993) it is estimated that St John Eye Hospital treats 75% of all penetrating injuries within the West Bank and Gaza strip. He compared the incidence of penetrating injuries as indicated in table 7.

Table seven: Incidence of Penetrating Eye Injuries in selected Countries, Elder (1993).

Place	Percentage per 100,000 per annum
West Bank and Gaza	4
Israel	3.6
Northern Ireland	1.8-3.6
USA	0.2

In industrialized countries the prevalence of blindness due to injury is 9/100,000 and the prevalence of visual disability is 300/100,000. On the other hand in developing countries, the prevalence of blindness due to injury is 75/100,000 and the prevalence of visual disability is 490/100,000. (Johnson, Minassian and Weale, 1997).

In Palestine such data is not available. However from St John Eye Hospital records (both in Jerusalem and Gaza) it is indicated that annually the hospital receives around 3803 injuries. These vary from simple corneal abrasion/scratch to rubber and

metal bullets embodied in the eye cavity. Please see tables eight and nine for more details.

The incidence of eye injury in warfare situation has been estimated to be (20-50) time higher than that in civilian lives, (Johnson et al, 1997). According to Jauni and O'shee (1996), In Jerusalem, the West Bank and Gaza Strip, rubber or plastic bullets were the leading cause of visual loss in the period between 1987-1993. In a study carried out by Elder (1993) involving 118 cases of penetrating injuries in the West Bank and Gaza Strip he revealed that about 32% of the cases were due to thrown stones and hammering.

According to the St John Hospital statistics (2001) since September 2000-December, 2001 there were 199 cases of eye injuries due to violence of the Israeli occupation, 67 sustained injuries as a result of rubber or plastic bullets and 45 have lost their sight at least in one eye. Please refer to tables eight and nine for more details.

Table Eight: Eye injuries Seen at St John Eye Hospital in the year 2002.

Type of injury	Number of casualties
Corneal abrasion	560
Corneal F.B	456
Hyphaema	206
Blunt injury	447
Penetrating injury	80
Chemical injury	67
Intra ocular Foreign body	83
Welding	87
Total	1983

Source: St John Eye Hospital Statistics, 2002

Table Nine: Eye injuries as a result of the second Intifada.

Type of injury	Number
Rubber and plastic bullet	67, (45) of these lost sight at least in one eye.
Ocular injuries-blunt, beating, gas etc	132
Total	199

Source: St John Eye Hospital Statistics, 2002

Causes of visual blindness and visual impairment in Palestine

The only published or at least known study that investigated the causes of blindness and visual impairment in Palestine was conducted by Thompson and Chumbley in 1984. This study involved 9548 Palestinian subjects living in the West bank and Gaza Strip and revealed that the overall incidence of low vision was 6.8% and 1-7% of binocular blindness.

The three principle causes of blindness in order of frequency were cataract, trachoma and corneal diseases. The validity of the results could be questioned now due to the health care development that took place since then. In addition, it is believed that nowadays there are very few if any active cases of trachoma due to improved sanitation and access to clean and safe water supply.

The Palestinian Population Census (1997) appears to be the most recently published data on visual disability in Palestine amongst those who are over 10 years old. The census revealed that there were 6727 people who are over 10 years and have visual disability. These were divided as the following: Refuges: 1203, rural area: 2318 and urban: 3206. The sex distribution was as follows: 4004 male (59.5%) and 2723 females (40.5%).

This places the prevalence of visual disability to be around 0.26%. This by no means reflects the current situation as such figures are only true for some industrialized counties. In addition, the census used a definition for visual disability which by no means represents internationally acceptable standards (it includes any one eyed person and any person suffering from a clear sight weakness even after using special devices provided that they do not suffer from any other disabilities). (PCBS (1997).

Examining this definition further indicates that it does not represent a scientific account of visual impairment and blindness as defined by the WHO. In such cases it will be up to the respondent and or interviewer to decide whether a person has visual disability. This of course presents with it many biases such as reporting and interviewer biases.

Furthermore, a blind person or the visually disabled should be registered as blind or disabled regardless of any other disabilities that the person may suffer from.

According to the census, the main causes of visual disabilities are as presented in table ten.

Table ten: Causes of Visual Disability in Palestine as Indicated by the Palestinian Population Census (1997).

Causes of disability	Number of visually disabled	Percentage
Diseases	3141	46.7
Congenital	1803	26.8
War	382	5.7
Work injuries	249	3.7
Traffic accidents	92	1.37
Other accidents	639	9.5
Others	232	3.5
Not stated	98	1.5
Total	6727	100

From this table it is apparent that the census does not identify the types of diseases that caused almost 46.5% of visual disability in Palestine. In addition, this data is subject to many types of biases such as reporter bias and interviewer bias. It would be up to the participant to decide the cause of his/her disability.

From this one can conclude that Palestine lacks reliable data as to the prevalence or blindness or visual disability. Even St. John Eye Hospital which is the main provider of eye care in Palestine does not have adequate data that addresses this issue. This is mainly due to the unavailability of suitable compute programs at the hospital in addition to lack of interest in research particularly in this field.

It is imperative that such data is available to enable health planners both at the institutional and national levels to channel resources and target those who are at most risk of visual disability and blindness.

This piece of research aims to provide both reliable and detailed data on the specific causes of visual impairment and blindness using medical judgment with a specific population. It will provide a clearer picture of the current situation and can be used to build on for future larger scales research.

B) Conceptual Framework

In attempting to develop a conceptual framework for this research, WHO definitions of blindness and visual impairment were emphasized. Blindness is defined by the WHO (1999) as visual acuity of less than 3/60 or corresponding visual field loss in the better eye with best possible correction. This corresponds to loss of walk about vision. On the other hand, low vision or visual disability is defined by the WHO(1999) as visual acuity of less than 6/18 but equal to or better than 3/60 in the better eye with the best possible correction. From these definitions, we can only categorize people if their visual acuity is measured.

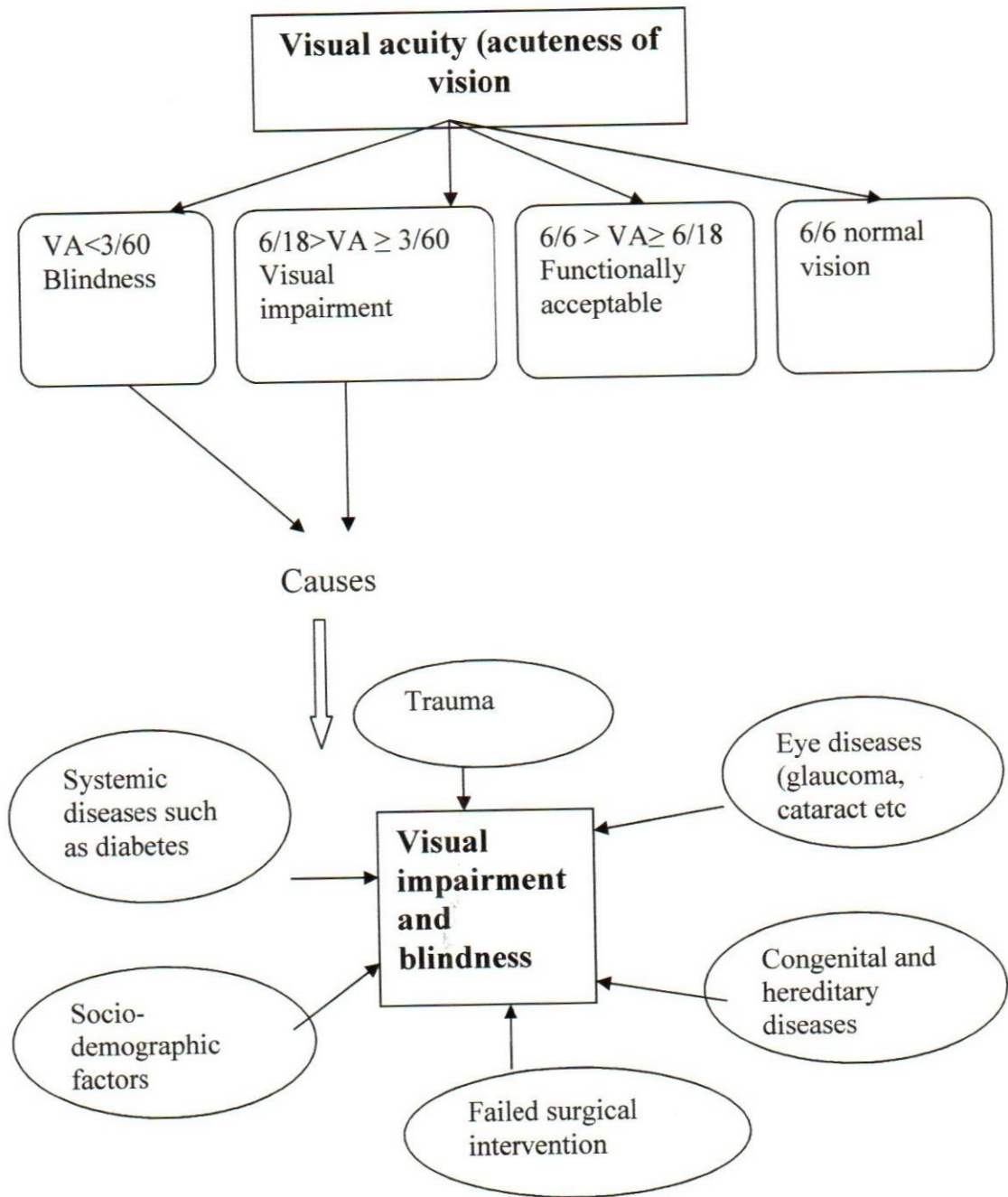
The estimated world wide prevalence of blindness is 0.7% ranging from 0.3% in industrialized counties to 1.4% in sub-Saharan Africa. Causes of blindness and visual impairment vary according to economic, social and development factors of various countries. In Middle Eastern countries the main causes of blindness and visual impairment are cataract, trachoma, glaucoma and diabetes as indicated by Tabbara (2001).

Blindness and visual disability appear to be influenced by age as many causes of blindness and visual disabilities are specific to the elderly. In addition access to ophthalmic health care may also play a role in the prevention and treatment of certain causes of visual disabilities and blindness. Consanguinity is another factor of interest especially in Middle Eastern counties. In Palestine Elder (1993) pointed out that 49% of the congenital glaucoma cases investigated have history of consanguinity.

The individual's level of education and visual impairment or blindness may also prove significant. This is the case as less educated people may be more prone to certain occupational accidents due to the nature of their work environment. In addition, less educated people may have little access to a rather expensive private ophthalmic health care in Palestine.

A pictorial conceptual framework based on the above is depicted in graph (2).

Graph two: Causes of Visual Impairment and Blindness



Chapter Four

Methodology

This was descriptive and explorative study wherein quantitative data was collected to address the objectives of the study.

Following ethical approval from the St John Eye Hospital's ethical and research committee, patients attending the community outreach clinic were selected to participate in the study. Subjects were approached and those who agreed to participate were asked to sign a consent form. (Please see appendix 6).

Prior to commencing the study, nurses, ophthalmologists and technicians were approached and the study aims and objectives were explained to them. Such approach was essential to ensure cooperation and consistency as some of the data was collected by ophthalmologist, nurses and other technicians

Study population and sampling

The study population was all patients who are 10 years old and over attending the hospital's community mobile clinic during three months period (from January to April, 2003). The choice of this age group is mainly due to the fact that visual development is usually complete by the age of 10 years. Therefore, many children whose vision has not yet developed may be falsely categorized as having visual problems. In addition quantifying children's vision especially infants can be very difficult and requires extensive resources and highly qualified and specialized personnel.

In total, the hospital holds 2 mobile clinics each week. These clinics cover various venues in different parts of the West Bank with emphasis on remote areas with scarce ophthalmic resources.

As data gathering involved the participation of various medical and paramedical staff which required extensive resources, it was decided that a three month period will be sufficient to explore the research problem adequately. As generalization was not the aim of this study, it was decided that 25% of the total number of clinics held during a period of three months would be sufficient to address the objectives of this study. The researcher randomly selected clinics and collected data from all patients who met the criteria and consented to participate. In the data collection period (3 months), 24 clinics were held in various parts of the West Bank.

In choosing the clinics the researcher used a random systemic method where every 4th clinic on the outreach timetable was selected. As formulating the time table for the clinics is carried out by the outreach co-coordinator with no consultation with the researcher, the first clinic on the programme was chosen and then every fourth clinic. A total number of 6 clinics were selected and as a result 235 patients participated in the study and comprised the study sample.

As prevalence of blindness and visual impairment constitutes one of the main objectives of the study, all patients who met the criteria and consented to participate formed the sample.

Data gathering instrument

A structured interview was carried out with each subject on their arrival to the mobile outreach clinic. Questionnaire has been designed to collect data and consisted of three main parts, (please see appendix one).

1. Section one: (1-7) collected data on clinical findings as determined by ophthalmic examination.
2. Section two: (8-15) examined patient's knowledge about his or her eye condition. It also examined patients' accessibility to and knowledge of ophthalmic services in there area of residence. Type of services received by patients was also explored.
3. Section three: (16-28) examined demographic data about each subject (age, sex, place of residence, marital status and educational level).

The first section of the questionnaire was completed based on medical examination and judgments, while sections two and three were completed by interviewing the patients.

Ethical considerations

The research proposal was submitted to the hospital's ethical and research committee for approval. (Please see appendix 5).

Following approval subjects were approached to participate in the study. A verbal explanation of the objectives of the study was given to each participant. Subjects were asked to sign a written consent to participate in the study. (Please see appendix 6).

Following consent, subjects were interviewed in a private environment to ensure both confidentiality and to enhance concentration level as well as to avoid distraction. In order to ensure anonymity, only the subjects' hospital number was used. Each participant was assured that his/her participation or refrain from participation will by no means influence the care he/she was to receive. In addition, participants were not subjected to unnecessary tests or investigations. The tests that were carried out were routine examinations that all ophthalmic patients go through. Participants were only referred to the base hospital(St John Eye Hospital in Jerusalem) if the treating ophthalmologists decided that such referral was necessary and may result in benefit to the patient.

Techniques used in data gathering:

The researcher interviewed all patients while the ophthalmic medical officer completed the medical component of the questionnaire.

Patients were interviewed on their arrival to the clinic and the purpose of the study was fully explained to each potential participant. Those who met the selection criteria and agreed to participate were asked to sign a written consent form. In order to maintain privacy and enhance a conducive environment, all interviews were conducted in a private room with the patient on his own or with a relative as appropriate.

On average, fifteen minutes were needed to complete each interview.

In order that the data gathered from the questionnaire can be utilized to achieve the objectives of the study, it was imperative that the measuring instruments are both valid and reliable. Reliability and validity are related in that unreliable questionnaire can not be valid however, a reliable question may still be invalid, (Jack and Clerke, 1998).

Reliability refers to the consistency with which respondents understand and respond to all questions. On the other hand, validity is the extent to which a questionnaire measures what it is supposed to measure. The questionnaire consisted of 28 closed questions in three sections. Closed ended questions were chosen as closed ended questions are easier on the respondent because they require less effort. These were utilized to gather data in a structured interview. The researcher asked questions in the same order and manner in order to reduce error and increase reliability. It was

argued by Treece and Treece (1984) that reliability of the interview depends on the wording of the questions; the questions should mean the same things to all respondents. At the same time the interview presentation should be uniform in order to enhance reliability and validity of the question and a pilot study is planned prior to data collection. In addition, the pilot testing of the questionnaire was essential to determine whether questions were clear and understood and interpreted in the same manner by all respondents.

As part of the assessment, each patient's visual acuity was carried out using a standard Snellen chart. This chart is equivalent at each size level with a logarithmic progression of letter size. Letters are of equal legibility and there is the same number of letters on each row (line) and there is uniform spacing both between letters and between rows.

This is a universally valid method to determine distance vision. In order to enhance reliability, the chart was placed in a well lit room and at a distance of 6 meters from the patient. In addition, a staff nurse with a post graduate Diploma in ophthalmic nursing carried out the visual acuity testing. The staff nurse was informed and assessed on the standard procedure for visual acuity testing. This was essential to minimize discrepancy and enhance uniformity of the technique used.

In order to enhance patients' cooperation, an explanation of the test was carried out to every patient and the test was performed in privacy and in a conducive environment.

With regard to diagnostic evaluation, each patient was examined using a Slit lamp and a fundoscopy was performed where appropriate to make diagnosis. This was carried out by ophthalmologists with post graduate Diploma in ophthalmology. Those patients, whose cause of visual impairment and blindness were not clear on the site, were referred to the base hospital for further investigations and confirmation of diagnosis.

Pilot testing:

A pilot study was conducted which involved 10 subjects. This sample was purposive in nature to include patients with normal vision, visual impairment and blindness. Such sample represented to a large extent the study population.

Conducting the pilot study proved essential to ensure that the instrument used was ready for the larger research study. As a result of the pilot study one question needed to be amended in order to ensure that the data collected truly represented the subjects' clinical status.

Data analysis:

Data was coded and entered into the computer. The Statistical Package for Social Sciences (SPSS) program was used to analyze the data. Descriptive statistics were used to analyze the data gathered. As the approach taken was descriptive in nature, data was classified so as to become meaningful.

Summary:

This chapter has outlined in details the methodology used in this research to study the causes of visual impairment and blindness amongst patients attending a community mobile clinic. Ethical approval was sought and granted from the hospital management prior to conducting this study. A full explanation of the study and its objectives was carried out to each patient and patients were asked to sign consent prior to their participation.

Data was collected using a structured interview and medical examination. The questionnaire consisted of three main sections; the first examined the patients' ocular health status, the second explored patients' knowledge and accessibility to eye care and the third recorded demographic data.

Chapter Five

Results

Data was collected over a period of three months from January to April 2003. The data was collected from six clinics out of twenty four clinics held during the same period. The number of patients who attend the six clinics and those who met the selection criteria and agreed to participate are indicated in table 11.

Table 11: The Number of Patients Who Attended the Six Clinics

Clinic	Number of patients attending the clinic	Number of patients who met the selection criteria and agreed to participate
Balata Camp	50	38
Fara'a Camp	43	38
Halhoul	58	49
Doura	46	39
Selat Thaher	60	46
Nablus	44	32
Total: 6	301	235

Out of the three hundred and one patients who attended the six mobile clinics, sixty three (26.3%) were children under 10 years and therefore were excluded from the study.

Three (3) subjects out of two hundred and thirty eight (1.2%) who met the criteria refrained from participation due to lack of available time.

In the following tables results of the study are presented and interpretations follow in chapter seven.

Section one: Ocular health status

Table 12: Percentages of Patients' According to Their Vision

Vision status	Frequency	Percent
Acceptable vision	178	75.7
Visual impairment	45	19.1
Blindness	12	5.1
Total	235	100.0

One hundred and seventy eight (75.7%) of those who participated in the study had acceptable visual acuity. Forty five individuals (19.1%) had visual impairment and twelve (5.1%) suffered from blindness.

Table 13: Distribution of Patients According to Type of Visual Defect

Type of visual defect	Frequency	Percent
Unilateral visual impairment	19	8.1
Bilateral visual impairment	18	7.7
Unilateral blindness	6	2.6
Bilateral blindness	8	3.4
Visual impairment in one eye and blindness in the other	13	5.5
Total	64	27.2

Sixty four (27.2%) of the participants had either visual impairment or blindness. This varied from unilateral visual impairment (8.1%), bilateral visual impairment (7.7%), unilateral blindness (2.6%), bilateral blindness (3.4%) and visual impairment in one eye and blindness in the other eye (5.5%).

Table 14: Causes of Visual Impairment and Blindness

Cause	Frequency
Trauma	2
Un-operated cataract	26
Post cataract surgery	4
Diabetic retinopathy	10
Glaucoma	5
Hereditary	1
Amblyopic and refractive error	3
Others	5
Total	57

The main cause of blindness and visual impairment was un-operated cataract (45.6%). This high percentage was followed by diabetic retinopathy (17.5%). As for glaucoma it caused (8.8%) of the total cases of blindness and visual impairment. This was followed by those who had failed surgical treatment for cataract (7.0%). Trauma and Amblyopia caused (5.2%) of the total cases of blindness and visual impairment.

Table 15: Causes of Trauma

Cause of trauma	Frequency	Percent
Work place related	1	.4
Others	1	.4
Total	2	.9

Two cases sustained visual impairment or blindness as a result of work related accidents (4%) and road traffic accidents (4%).

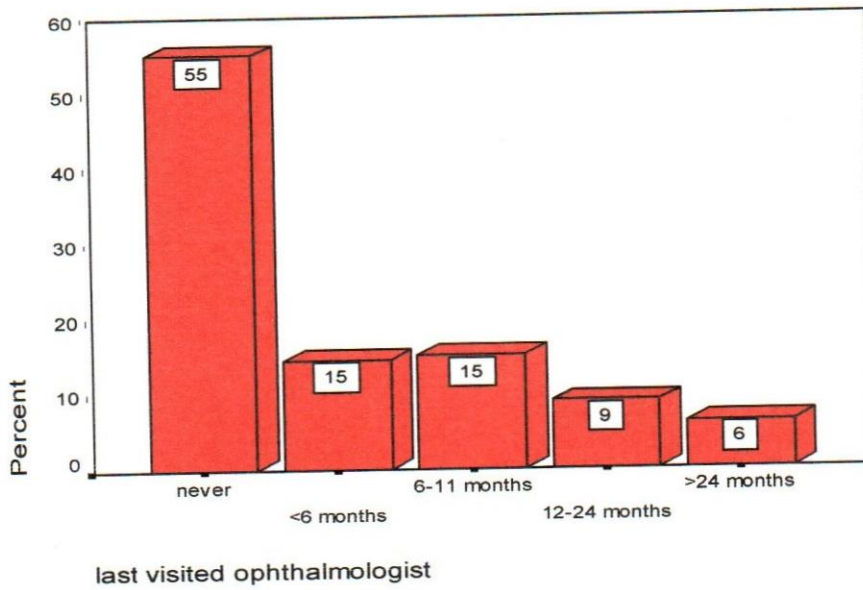
Section Two: level of patients' knowledge and accessibility to eye care.

Table 16: Duration of Poor Vision as Indicated By Visually Impaired and Blind Individuals.

	Frequency	Percent
Less than one year	3	1.3
1-2 years	12	5.1
More than two years	42	17.9
Total	57	24.3

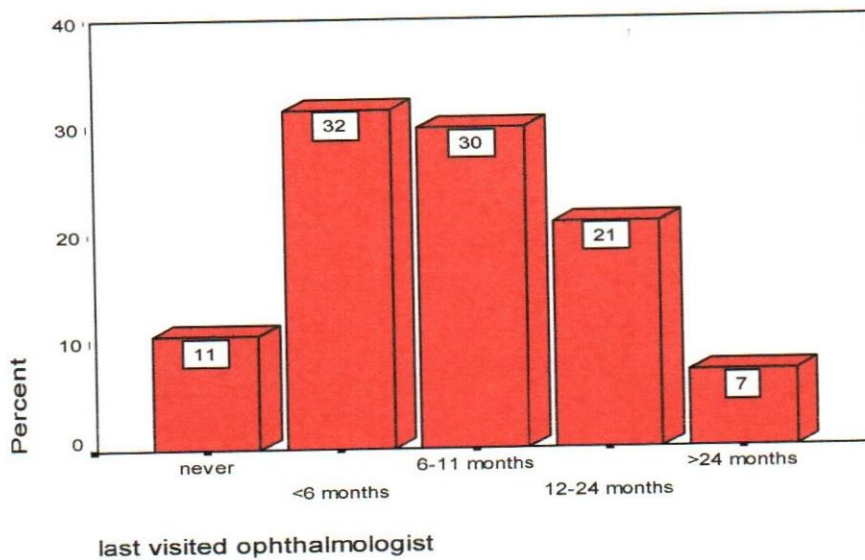
Forty two (17.9%) of those who had either visual impairment and or blindness have been suffering for more than two years. Twelve participants (5.1%) have been suffering for 1-2 years. Only three (1.3%) have been suffering for less than one year.

Graph 3: Distribution of Patients with Acceptable Vision According to Last Visit to an Ophthalmologist



Fifty six percent of those with functionally acceptable vision never visited an ophthalmologist. Fifteen percent visited an ophthalmologist less than 6 months ago and another (15%) visited an ophthalmologist 6-11 month ago. Nine percent visited an ophthalmologist 12-24 months ago and (6%) visited an ophthalmologist more than 24 months ago.

Graph 4: Distribution of Patients with Visual Impairment and Blindness According to Their Last Visit to an Ophthalmologist



Amongst those who have either visual impairment and or blindness eleven percent never visited an ophthalmologist. Thirty two percent visited an ophthalmologist less

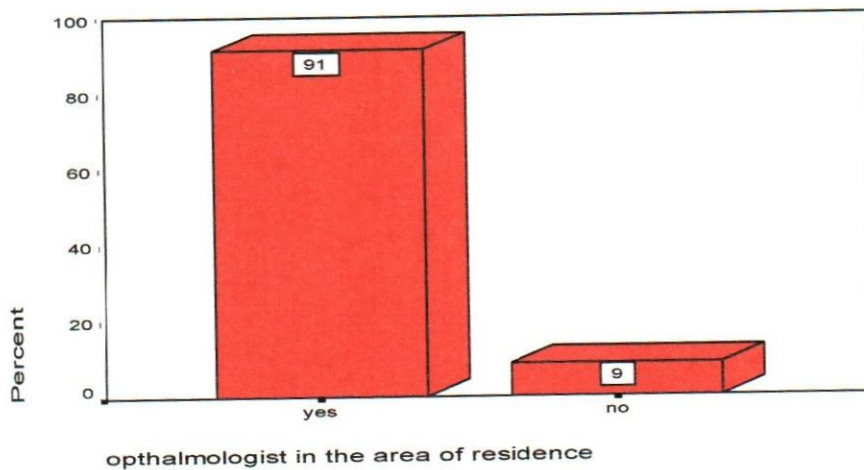
than 6 months ago and (30%) visited an ophthalmologist 6-11 months ago. Twenty one percent last visited an ophthalmologist 12-24 months ago and (7%) last visited an ophthalmologist more than 24 months ago.

Table 19: Distribution of Patients According to Their Knowledge about Ophthalmologist in the Area of Residence

	Frequency	Percent
Yes	168	71.5
No	67	28.5
Total	235	100.0

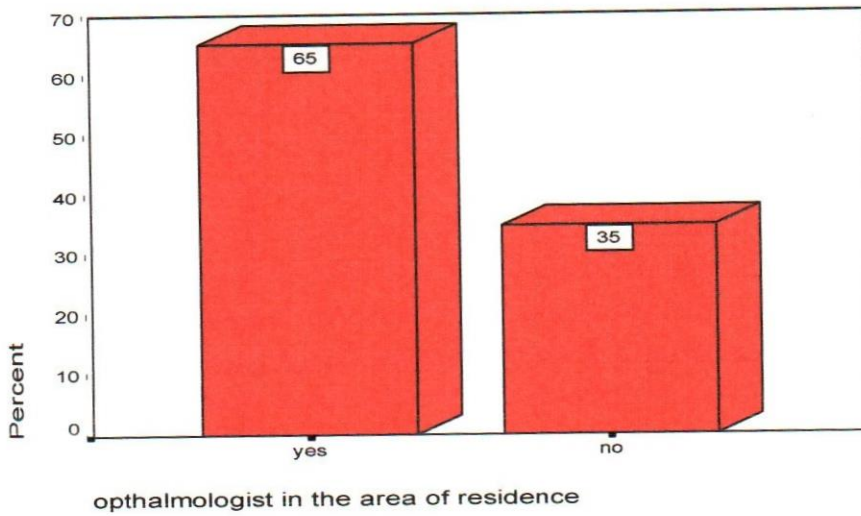
One hundred and sixty eight participants (71.5%) were aware and knew an ophthalmologist in their area of residence. On the other hand sixty seven participants (28.5%) were not aware of any ophthalmologist in any area of residence.

Graph 5: Distribution of Patients with Visual Impairment and Blindness According to Their Knowledge about Ophthalmologists.



Ninety one percent of those who were either blind or visually impaired knew at least one ophthalmologist in their area of residence. Only nine percent were not aware of any ophthalmologist in their area of residence.

Graph 6: Distribution of Patients with Acceptable Vision According to Their Knowledge about Ophthalmologist.



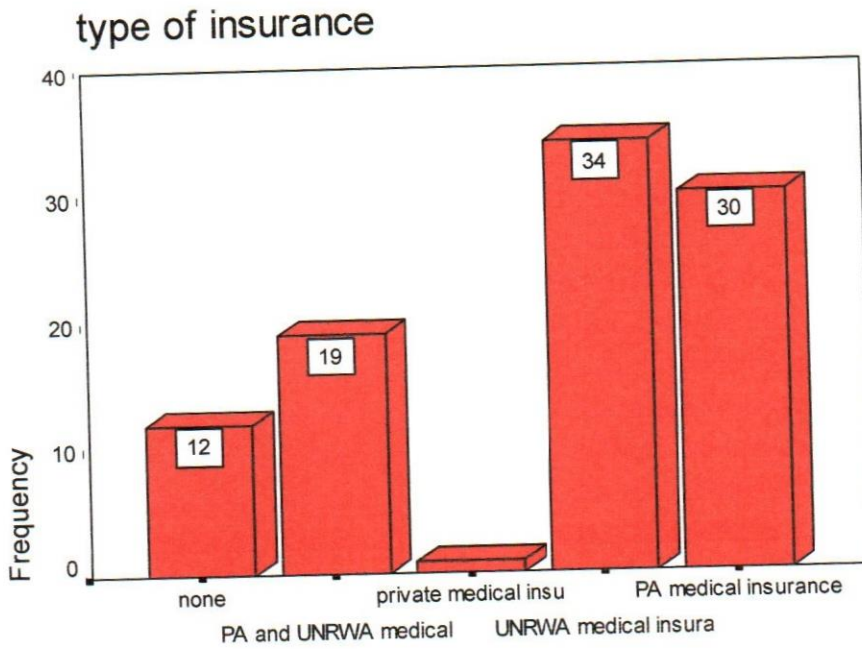
Amongst those with functionally acceptable vision sixty five percent knew an ophthalmologist in their area of residence and (35%) did not know an ophthalmologist in their area of residence.

Table 20: Distribution of Patients According to Distance from Ophthalmologist.

Distance	Frequency	Percent
0-10km	71	30.2
11-20km	73	31.1
>20km	27	11.5
Total	171	72.8

Seventy one participants (30.2 %) estimated the distance from their local ophthalmologist to be less than 10 Kilometers. Seventy three (31.1%) estimated the distance to be 11-20 Kilometers. Twenty seven (11.5%) estimated the distant from their ophthalmologist to be more than 20 Kilometers.

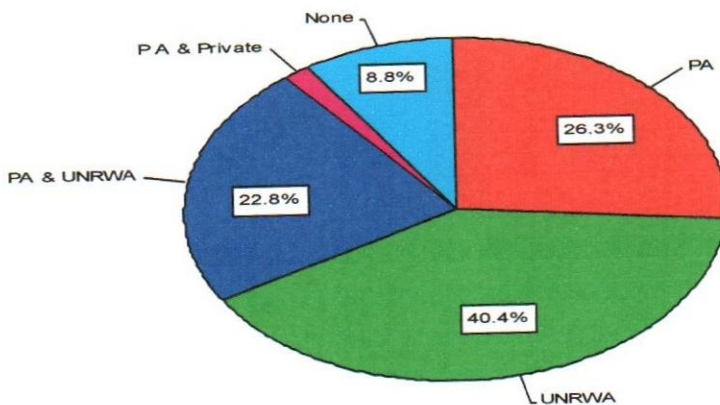
Graph 9: Distribution of Patients According to Medical Insurance



type of insurance

Twelve percent of the participants had no medical insurance, while nineteen percent had both UNRWA and PA medical insurance. Thirty percents had only PA medical insurance and (34%) had only UNRWA medical insurance.

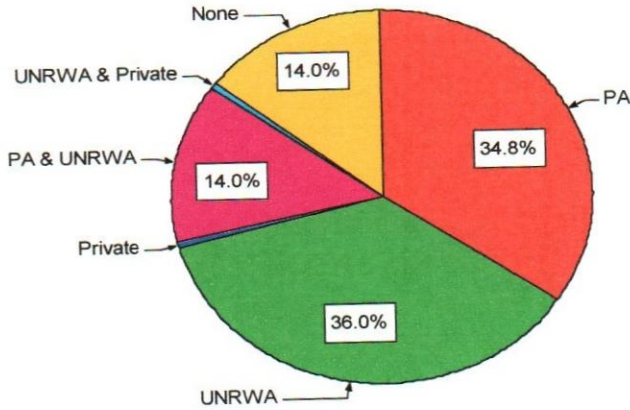
Graph 10: Distribution of Blind and Visually Impaired Individuals According to the Type of Medical Insurance.



Amongst those who are either visually impaired or blind, (40.4%) had UNRWA medical insurance and (26.3%) had Palestinian Authority medical insurance. Twenty two point eight had both UNRWA and Palestinian authority medical

insurance. Eight point eight percent had no medical insurance at all and (1.7%) had private medical insurance.

Graph 11: Distribution of Patients with Acceptable Vision According to the Type of Medical Insurance.



Amongst those with acceptable vision thirty six percent had UNRWA medical insurance and (34.8%) had PA medical insurance. Fourteen percent had both PA and UNRWA medical insurance. Fourteen percent had no medical insurance what so ever and (1.8%) had private medical insurance.

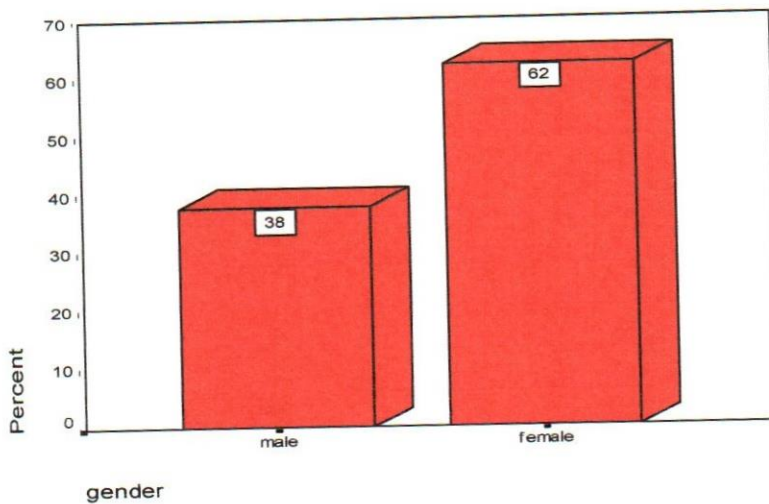
Section Three: Demographic Data:

Table 21: Distribution of Patients According to Their Gender.

	Frequency	Percent
Male	134	57.0
Female	101	43.0
Total	235	100.0

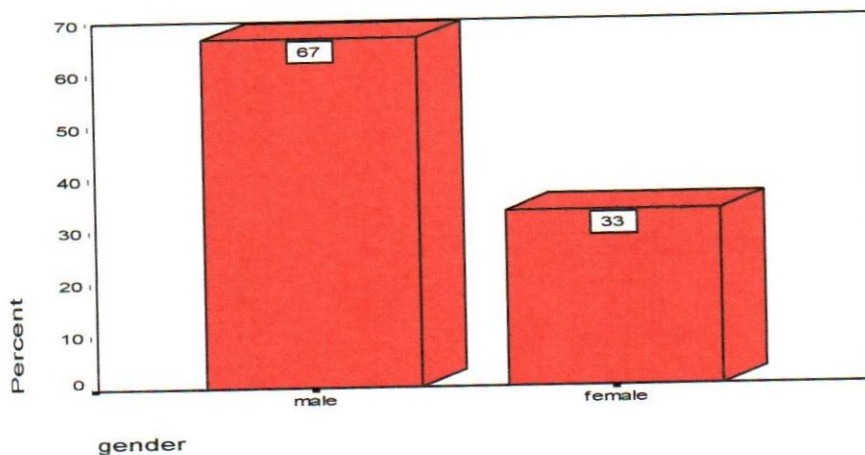
One hundred and thirty four participants (57%) were male and one hundred and one participants (43.0%) were female.

Graph 12: Distribution of Patients with Visual Impairment According to Gender.



Amongst those who were visually impaired sixty two percent were female and 38% were male.

Graph 13: Distribution Blind Individuals According to Their Gender.



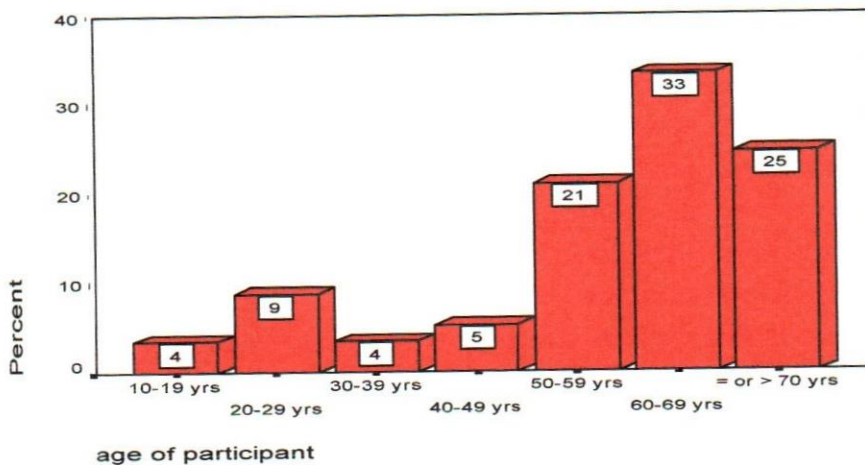
It was very interesting to note that amongst those who were blind sixty seven percent were male and only (33%) were females.

Table 22: Distribution of Patients According to Age.

	Frequency	Percent
10-19 yrs	77	32.8
20-29 yrs	34	14.5
30-39 yrs	34	14.5
40-49 yrs	24	10.2
50-59 yrs	22	9.4
60-69 yrs	29	12.3
= or > 70 yrs	15	6.4
Total	235	100.0

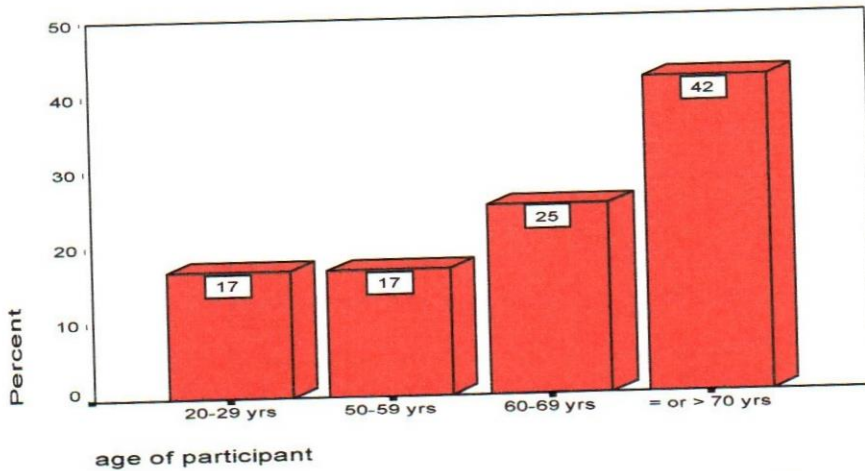
Seventy seven participants (32.8%) were aged 10-19 years and (14.5%) were aged 20-29 years. Fourteen and a half percent were aged 30-49 years and (10.2%) were aged 40-49 years. only (6.4%) of the participants were 70 years or older.

Graph 14: Distribution of Visually Impaired and Blind Individuals According to Age.



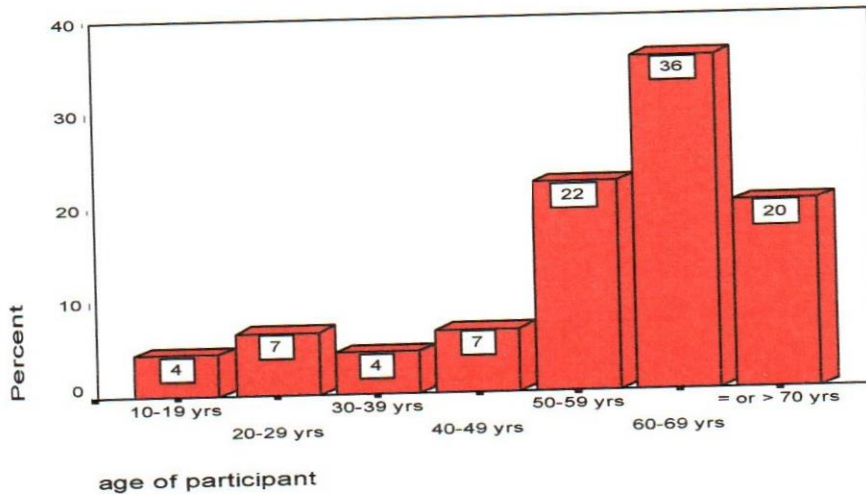
Amongst those who are blind and visually impaired thirty six percent are in the age group 60-69years. Twenty two percent of those who are blind are aged 40-49 years compared to twenty percent who are 70 years and older. It was interesting to note that amongst those less than 40 years old, those in the age group 20-29 had the highest percentage of blind and visually impaired (7%).

Graph 15: Distribution of Blind Individuals According to Age.



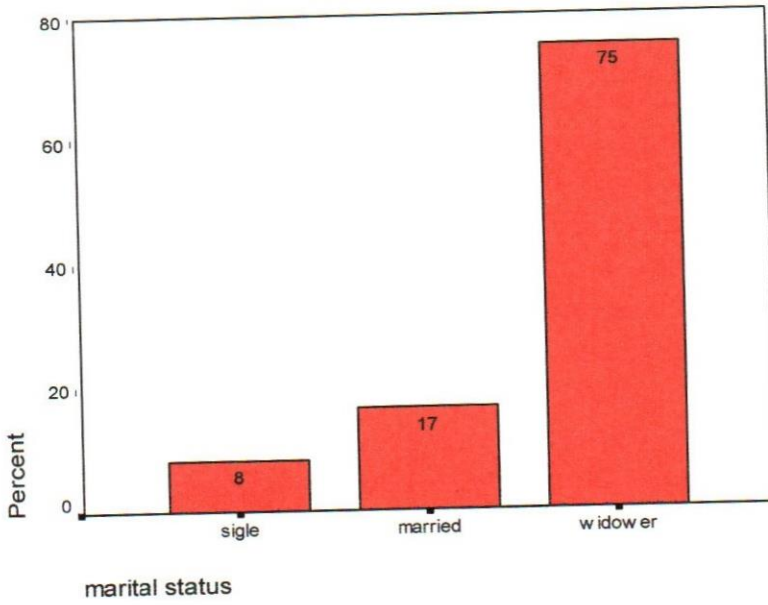
From those who were blind, forty two percent were 70 years old or over and (25%) were aged between 60-69 years. Seventeen percent of those were in the age group of 50-59 years and the same percentage was aged 20-29 years.

Graph 16: Distribution of Visually Impaired Individuals According to Age



As for those who were blind, forty two percent were 70years and older. Of those who are blind twenty five percent were in the age group 60-69years. Again the percentage of those who were blind in the age group 20-29 years old was again high (17%) as it is similar to the age group 50-59 years old.

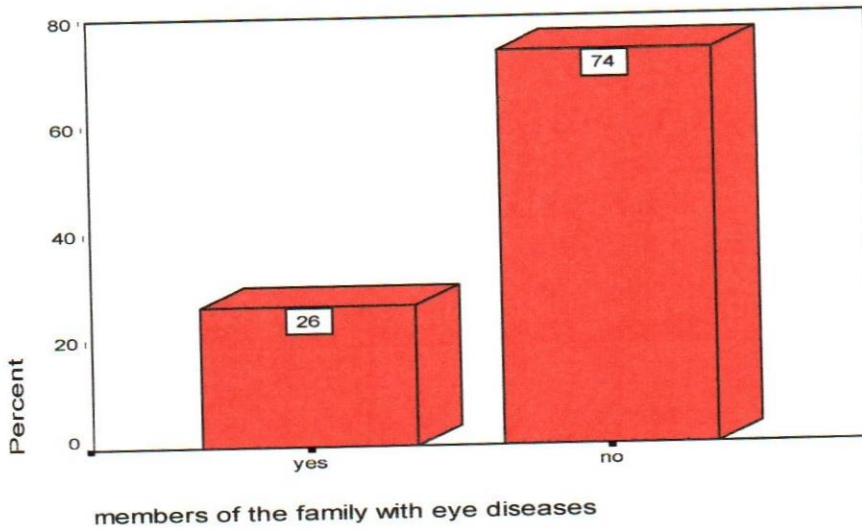
Graph 18: Distribution of Blind Individuals According to Marital Status.



Amongst those individuals who were blind seventy five percent were widowers and (17%) were married. Only nine percent were single.

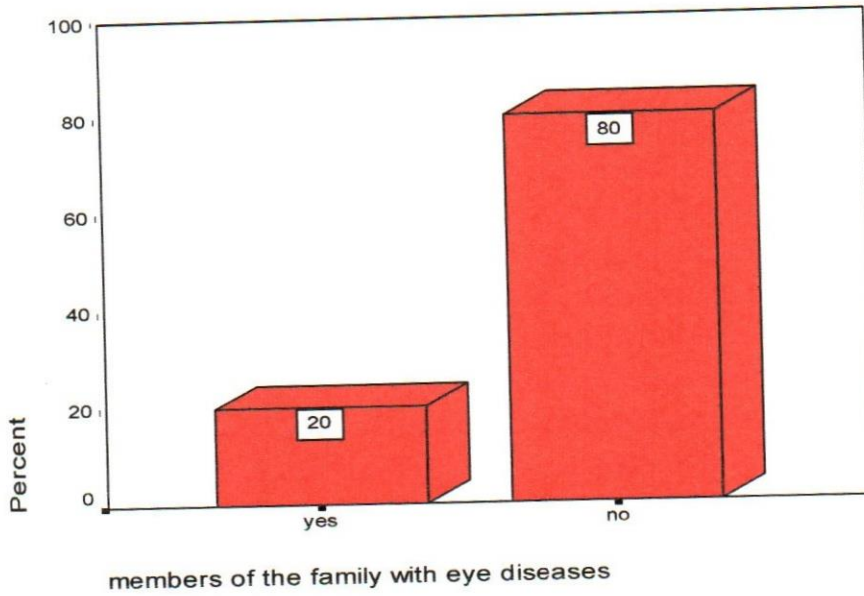
Graph 19: Distribution of Blind and Visually Impaired Individuals.

According to Presence of Family Eye Diseases.



Amongst those with either visual impairment and or blindness twenty six percent had at least one family member with eye disease and (74%) had no family member with eye disease.

Graph 20: Distribution of Patients with Acceptable Vision According to the Presence of Family Eye Diseases.



Amongst those whose vision is acceptable twenty percent of their families have at least one member with eye disease and (80%) with no family member with eye disease.

Table 24: Distribution of Patients by Relationship between Parents

	Frequency	Percent
Yes	45	19.1
No	190	80.9
Total	235	100.0

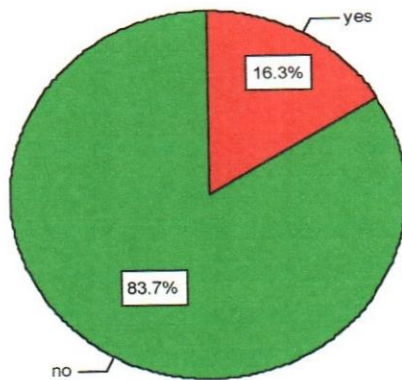
Forty five (19.1%) of the participants indicated that their parents are related and (80.9%) indicated that their parents were not related.

Graph 21: Distribution of Visually Impaired and Blind Individuals According to Relationship between Parents



- From those who are either visually impaired or blind, (22.1%) indicated that their parents were related and (71.9%) indicated that their parents were not related.

Graph 22: Distribution of Patients with Acceptable Vision According to Relationship between Parents.



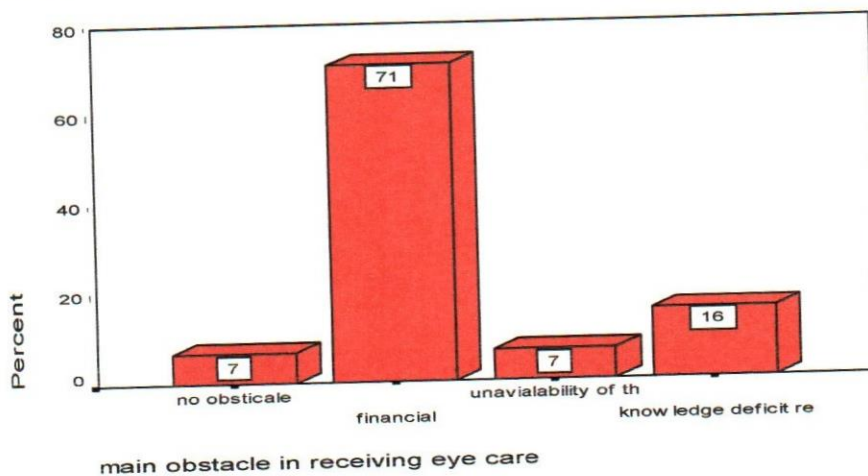
Amongst those whose vision is acceptable sixteen point three indicated that their parents were related compared to (83.7%) who indicated that there parents were not related.

Table 25: Main Obstacles in Receiving Eye Care

Obstacle	Frequency	Percent
No obstacle	108	46.0
Financial	81	34.5
Unavailability of the service	25	10.6
Knowledge deficit regarding eye disease	21	8.9
Total	235	100.0

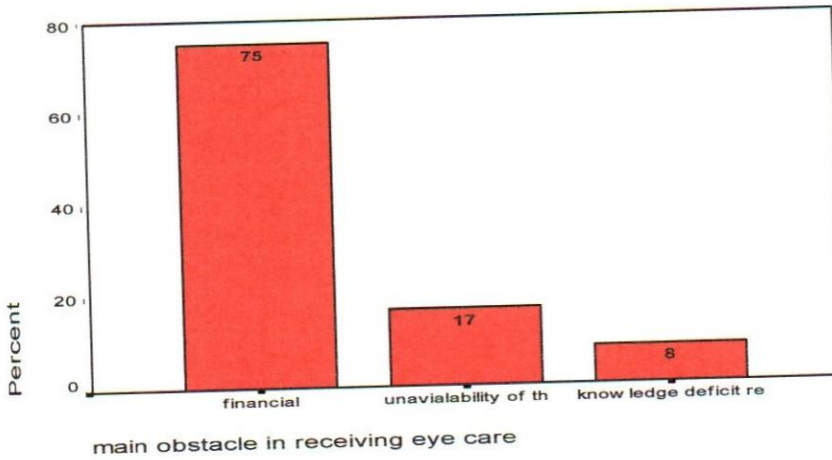
One hundred and eight (46%) indicated that they faced no obstacles in receiving adequate eye care. Eighty one (34.5%) indicated that financial reasons were the main obstacles in receiving adequate eye care. Twenty five (10.6%) perceived that the service was not available for them in their area of residences. Only twenty one (8.9%) considered knowledge deficit about eye disease as being the main obstacle in receiving adequate eye care.

Graph 23: Distribution of Blind Individuals According to Obstacles in Receiving Eye Care.



Seventy one percent of the visually impaired indicated that financial factors were the main obstacles in receiving adequate eye care. This was followed by knowledge deficit (16%) and unavailability of the service in the area of residence (7%). Only (7%) of those with visual impairment perceived no obstacle in receiving eye care.

Graph 24: Distribution of Blind Individuals According to Obstacles in Receiving Eye Care.



Seventy five percent of the blind individuals perceived financial factors as the main cause in hindering adequate eye care. This was followed by the unavailability of the service in their area of residence (17%). Knowledge defect was perceived by (8%) as the main obstacle in receiving adequate eye care.

Table 26: Distribution of Patients According to Education Attainment.

	Frequency	Percent
Can not read or write	32	13.6
Less than or Tawjehi	157	66.8
College or university	46	19.6
Total	235	100.0

Thirty two (13.6%) were illiterate and one hundred and fifty seven (66.8%) achieved less than Tawjehi education. Only forty six (19.6%) received either college or university education.

Graph 25: Distribution of Blind and Visually Impaired Individuals According to Educational Achievements

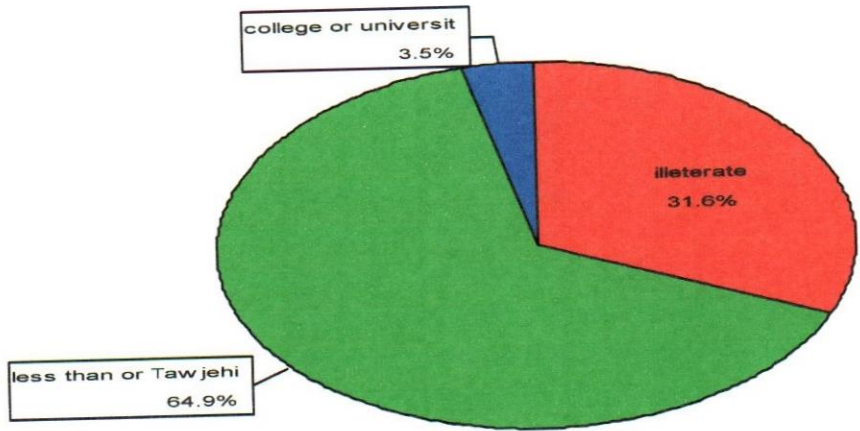


Table 27: Distribution of Patients According to Employment Status

Employed	Frequency	Percent
Yes	88	37.4
No	147	62.6
Total	235	100.0

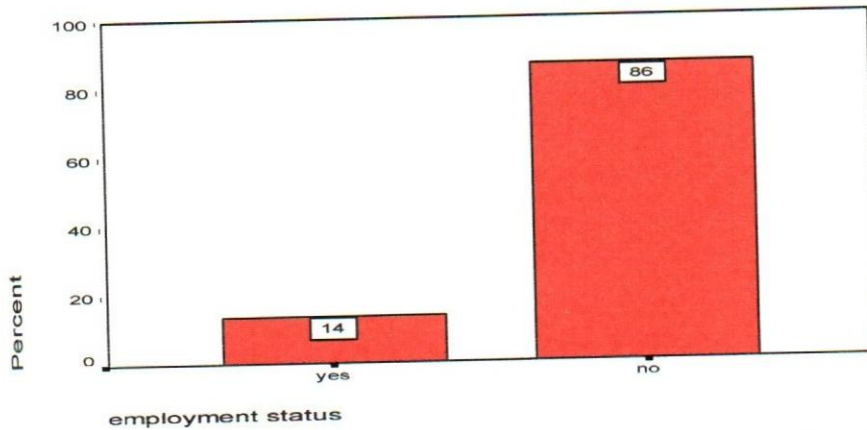
Only eighty eight (37.3%) of those who participated in the study considered themselves as employed and one hundred and forty seven (62.6%) were unemployed.

Table 28: Distribution of Patients by Type of Work

Type of work	Frequency	Percent
Self employed	37	15.7
Professional	26	11.1
Worker	23	9.8
Others	4	1.7
Total	90	38.3

Of those who were employed thirty seven (15.7%) were self employed and twenty six (11.1%) were professionals. Twenty three (9.8%) were workers.

Graph 26: Distribution of the Visually Impaired According to Employment Status.



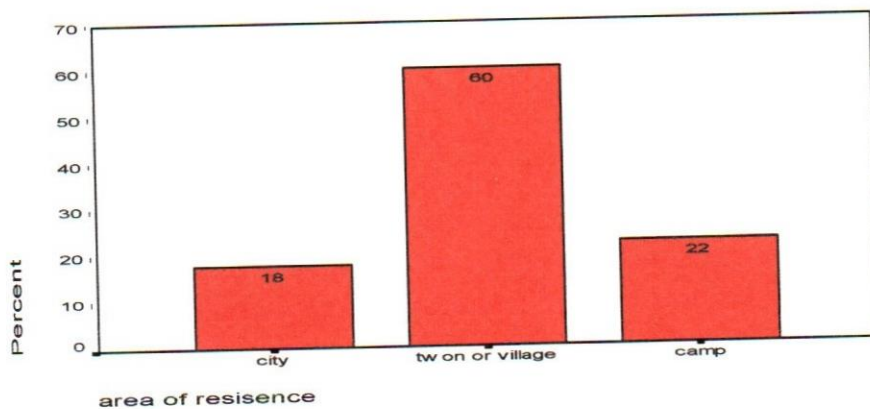
Amongst those who were visually impaired only 14% were employed compared to (0 %) employed amongst blind individuals

Table 29: Distribution of Patients According to Area of Residence

Area of residence	Frequency	Percent
City	77	32.8
Town or Village	103	43.8
Camp	55	23.4
Total	235	100.0

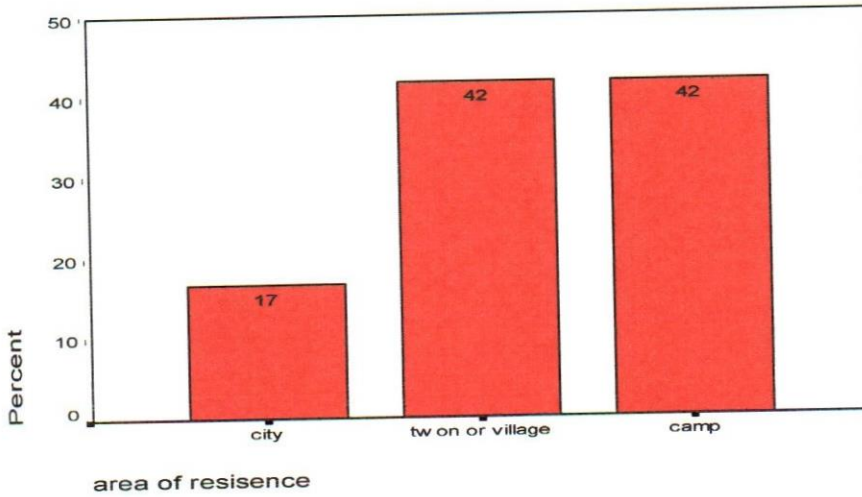
One hundred and three (43.8%) lived in either a town or village, (32.8%) lived in a city and (23.4%) lived in a camp.

Graph 27: Distribution of Visually Impaired According to Area of Residence.



Sixty percent of those who were visually impaired lived in either a town or village compared to twenty two percent who lived in a camp. Only eighteen percent who were visually impaired lived in a city.

Graph 28: Distribution of the Blind According to Area of Residence.



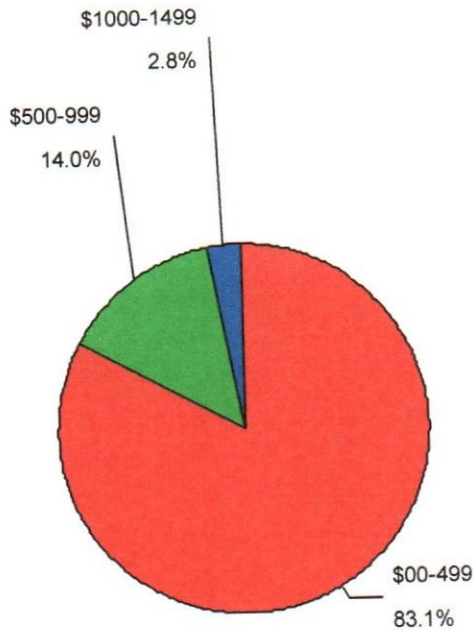
Forty two percent of those who were blind lived in a town or village and the same percentage (42%) also lived in camps. Only seventeen percent of the blind individuals in the study lived in cities.

Table 30: Distribution of Patients According to Family Monthly Income

Income	Frequency	Percent
\$00-499	205	87.2
\$500-999	25	10.6
\$1000-1499	5	2.1
Total	235	100.0

Two hundred and five (87.2%) classified their family income to be less than \$500 and (10.6%) classified their family monthly income to be \$500-\$999. Only two point one percent indicated that their total monthly family income to be \$1000-\$1499.

Graph 29: Distribution of Patients with Acceptable Vision According to Family Income.



Of those who have acceptable vision eighty three point one percent indicated that their family income is between \$00-499) and (14%) indicated that their monthly total family income is \$500-999. Only two point eight percent indicated that their total monthly family income is \$1000-1499.

Fifty six out of fifty seven (98.2%) of those who were either blind or visually impaired indicated that their total family monthly income is less than \$500.

Data summary

- Out of the three hundred and one patients who attended the six mobile clinics, sixty three (26.3%) were children under 10 years and therefore were excluded from the study.
- Three (3) subjects out of two hundred and thirty eight (1.2%) who met the criteria refrained from participation due to lack of available time.
- One hundred and seventy (75.7%) of those who participated in the study had acceptable vision according to the WHO definition.
- Forty five individuals (19.1%) had visual impairment.
- Twelve individuals (5.1%) suffered from blindness.
- In general sixty four of the participants had either visual impairment or blindness at least in one eye. Of those (8.1%) had unilateral visual impairment, (7.7%) bilateral visual impairment, (2.6%) had unilateral blindness, (3.4%) had bilateral blindness and (5.5. %) had blindness in one eye and visual impairment in the other eye.
- Twenty six (45.6%) individual had visual impairment or blindness as a result of un-operated cataract.
- Ten individuals (17.5%) had either blindness or visual impairment as a result of diabetic retinopathy.
- Five individuals (8.8%) had visual impairment or blindness due to glaucoma.
- In four cases (7%) the cause of blindness or visual impairment was failed surgical intervention for cataract.
- Two individuals (3.5%) had trauma as the cause of their blindness or visual impairment. In one of those, the cause for trauma was work related and in the other one the cause was road traffic accident.
- Forty two (17.9%) of those who had either visual impairment and or blindness have been suffering for more than two years. Twelve participants (5.11%) have been suffering for 1-2 years and only three (1.3%) have been suffering for less than one year.
- Only one person (1.8%) out of fifty seven received visual rehabilitation.
- 55% of those who have functionally acceptable vision never visited an ophthalmologist compared to 11 % who were either blind and or visually impaired.

- In general, one hundred and sixty eight individuals (71.5%) were aware of at least one ophthalmologist in their area of residence compared to (91%) who either blind or and visually impaired.
- In general, twenty seven individuals (11.5%) indicated that the nearest ophthalmologist is more than 20 Kilometers away from their area of residences, compared to (13%) of those who were either blind and or visually impaired.
- In general, 12% indicated that they had no medical insurance compared to 8.8% of those who were ether blind or visually impaired.
- One hundred and thirty four (57%) of the participant were male.
- Of the visual impaired individuals (38%) were male and (62%) were female compared to (67%) of the blind individuals being male.
- From those who were either visually impaired or blind, (79%) were aged 50 years or older.
- Amongst those who were visually impaired (44%) were widowers and (40%) were married. As for those who were blind (75%) were widowers and (17%) were married.
- Of those with acceptable vision, (20%) indicated that they have a family history of eye disease compared to (26%) of those who were either blind or visually impaired.
- Amongst those who were visually impaired (71%) indicated that the main obstacle in receiving eye care was financial hardship compared to (75%) of those who were blind.
- Amongst those who were visually impaired and or blind (31.6%) were illiterate.
- Of those who were visually impaired (14%) indicated that they were employed compared to (0%) of those who were blind.
- Eighty two percent of those who were blind lived either in rural areas and camps compared to (84%) that were blind.

Chapter Six

Discussion

Data was collected from two hundred and thirty five patients who attended six randomly selected outreach mobile clinics over a period of three months.

A. Major Findings and interpretation.

A.1 Ocular health status

The prevalence of visual impairment was (19.1%) and the prevalence of blindness was (5.1%). These figures appear higher than those quoted by other studies carried out in neighboring counties. However, one needs to emphasize the fact that this study was not a population based survey and therefore, it measured prevalence of blindness and visual impairment amongst patients seeking medical eye care. This may explain the exceptionally high prevalence of blindness and visual impairment.

Based on the results, un-operated cataract was the main cause of blindness and visual impairment as it caused (45.6%) of the total cases of visual impairment and blindness. This coincides with most results of studies carried out in various countries in the Middle East. In Lebanon, cataract accounted for (41.3%) of blindness, (Mansour et al, 1997) and (30.5%) in Oman (Khandekar et al, 2002). In general cataract caused (40%) of all blindness in the Middle East as indicated by the WHO (2002). Furthermore, Tabbara (2001) revealed that (45.2%) of all blindness in the Middle East is caused by cataract.

This high percentage of un-operated cataract causing visual impairment and blindness highlights a question as why the blockage in cataract surgery in Palestine. This can be attributed to many factors which are interrelated. It seems that for those who have visual impairment and or blindness (71% and 75% respectively), financial hardship was the main obstacle in receiving adequate eye care.

In addition, one needs to emphasize the current political situation and the lack of ophthalmic resources in the governmental hospitals particularly in the West Bank. As a result, patients may put up with their disabilities to be able to provide for other perceived more essential commodities. In addition, even those who have medical insurance may not always be able to receive medical referral to non-governmental

ophthalmic services. Those who may be privileged to receive referrals by the PA or UNRWA, may still face difficulties in reaching the eye hospitals due to the extremely strict internal closures which has been imposed by the Israeli occupation for more than two years.

It was not surprising to note that there was a rural-urban difference in the prevalence of blindness and visual impairment. As cataract caused (45.6%) of all visual impairment and blindness, this difference can be partly explained by the fact that those living in rural areas are more exposed to Ultraviolet light which is cataractogenic. Such findings were echoed by a study carried out in Lebanon by Mansour et al (1997).

The second cause of visual impairment and blindness was diabetic retinopathy (17.5%). This is by no means surprising taking into account the high prevalence of diabetes and poor ophthalmic primary care in Palestine. According to the Palestinian Ministry of Health (2000), the prevalence of diabetes in the general population is (9%).

Diabetic retinopathy screening leading to early detection is one of the major principles in preventing or reducing the incidence of diabetic retinopathy. In addition, successful treatment of chronic blinding eye conditions such as diabetic retinopathy and glaucoma rely heavily on patient compliance. It could be argued that information is integral to patient compliance. Such compliance requires that health care professionals place more emphasis on health promotion and health education. This should by no means be confined to the eye hospital boundaries but rather an integral role of all health care professionals namely those working in the primary care setting.

In addition to information, accessibility is another important factor in preventing and minimizing the effect of diabetes on ocular tissues. Those with diabetes are required to visit their ophthalmologist at least every 3-6 months and even more often depending on the severity of the disease. Jenkins and Mayon-white (1996) claim that various studies proved that the incidence of blindness from diabetic retinopathy can be significantly reduced by early intervention with Laser treatment. Furthermore, James and Harding (2002) concluded that screening for diabetic eye disease can prevent loss of sight and that a well established systematic screening in primary care is cost effective.

Currently in Palestine, there are no systematic screening programs for diabetic retinopathy. The screening activities which exist appear to be fragmented, uncoordinated and ill-planned.

The third most common cause of blindness and visual impairment was glaucoma (8.8%). This percentage compares favorably with a study carried out on Israeli subjects by Hod et al (2002) which indicated that glaucoma caused (13%) of all blindness in Israel. Again this high prevalence may reflect poor ophthalmic resources and poor patients' compliance which could be due to lack of adequate knowledge amongst eye patients.

Failed surgical intervention for cataract surgery caused (7.0%) of all blindness and visual impairment. This figure is high which again may reflect poorly trained ophthalmic medical and paramedical staff and lack of governmental supervision and regulations regarding licensure of ophthalmologists and ophthalmic surgeons.

Trauma caused (3.5%) of all cases of blindness and visual impairment which may reflect poor state regulations regarding health and safety at work. In addition, there has been a sharp increase in ocular trauma particularly at the start of the Al Aqsa *Intifada*.

A.2. Patients' knowledge and accessibility:

Of those who suffered from blindness and visual impairment, (73%) have been suffering for more than two years. Only one individual received visual rehabilitation. This very low figure is not unexpected as rehabilitation services for eye patients remain very primitive and are mainly delivered in the form of educational activities for young blind and visually impaired individuals.

From those who have functionally acceptable vision, (55%) had never visited an ophthalmologist and only (15%) visited an ophthalmologist less than six months ago. What is striking is the fact that (11%) of those who had visual impairment or blindness never visited an ophthalmologist. When asked about the main obstacle in receiving eye care, (75%) and (71%) of blind and visually impaired individuals

respectively, indicated that financial reasons were the main obstacle. Eye surgery and eye care in general, almost do not exist in the government health services and most of what is available of eye health care is provided by the private sector. Even in some districts this is provided by a few ophthalmologists who again have created a monopoly leading to increased cost of eye surgery and or consultation. It needs to be emphasized that certain potential blinding eye conditions require on-going monitoring and medical consultation which again places more financial burden on those in need for eye care.

One needs to also highlight the travel expenses as the service may not be available in the patient's area of residence. It could be estimated that travel expenses have tripled since the start of the current *Al Aqsa Intifada* due to restrictions imposed by the Israeli occupation. All of this accompanied by the economic hardship that stormed the Palestinian Territories in the past two and a half years, may have contributed to the inaccessibility to the originally expensive eye care.

Of those who were interviewed (75%) were aware of at least one ophthalmologist in their area of residence compared to (91%) of those who had either visual impairment and or blindness. However, (9%) of those who have visual impairment and or blindness were not aware of any ophthalmologist in their area of residence. In addition, of those with visual impairment and or blindness (61%) had to travel for more than 10 Kilometers to consult their ophthalmologists. Traveling for such a distant, especially under current Israeli restrictions, can be extremely difficult particularly for those whose vision is poor and who may need assistance. Such factor could have easily contributed to the fact that (11%) of those with visual impairment and or blindness who needed to consult an ophthalmologist never sought such care.

In general, only (14 %) of those interviewed had no medical insurance compared to (8.8%) of those who had either blindness or visual impairment. This percentage of the insured people (86%) is higher than that quoted by the PCBS (2003) which indicated that (57%) of the people in the West Bank are insured. This high percentage of insured individual may be partly due to the fact that two of the clinics were held in refugee camps where most residents are insured by UNRWA. In addition, it could be argued that those who are in need for medical care will seek medical insurance to cover their treatment expenses.

A3. Demographic characteristics

Of those who were interviewed (57%) were male and (43%) were females. Of those who were visually impaired, (62%) were female compared (33%) of those who were blind.

Age distribution for those who are either blind or visually impaired appears high for the age group 20-29 years. This can be explained by the fact that for those with type one diabetes; this is the time when severe diabetic retinopathy may develop especially amongst those with poorly controlled diabetes. Kanski (1997) mentions that type one Diabetes develops between the age of 10-20 years and the incidence of diabetic retinopathy 10 years after diagnosis is (50%).

The age group of 60-69 years appears to have the highest percentage of blindness and visual impairment (33%). This can be explained by the fact that this is the age of senile cataract formation. This percentage declines to (25%) in the age group of 70 years and over. Such decline may be due to the fact that patients with cataract in the previous age group might have sought treatment and underwent successful cataract surgery. According to the Palestinian Ministry of Health (2000), the life span of individuals living in Palestine is 70.2 years for males and 73.6 years for females which reduces the number of elderly people who are over seventy and therefore reduces the percentage of overall blindness in this age group.

In general, the incidence of visual impairment and blindness greatly increase with age because the most common blinding diseases, such as cataract, glaucoma and type two related diabetic retinopathy, are more prevalent in the elderly. Hyman (1987) pointed out that most of the estimated forty million blind individuals in the world are in the older age group.

In addition, the elderly population may be hesitant to seek medical care as Wormald (1999) argued that elderly people are programmed to anticipate a reduction in physical strengths and sensory awareness which may result in the loss of dominant role in their family.

For those who have blindness or visual impairment, (26%) indicated that they have a history of family eye disease compared to (20%) of those who have functionally

acceptable vision. This does not reflect a significant difference which might have been due to the relatively small size of the sample.

Of those whose parents were related (28%) had either visual impairment and or blindness compared to (16.3%) whose parents were not related. Although this difference is significant, hereditary causes of blindness and visual impairment were not significant (3.5%) in this study. Although, marriages between relatives play an essential role in the development of congenital cataract amongst children, this was not reflected in this study. This was due to the exclusion of children under the age of ten years who are expected to suffer from hereditary eye diseases.

In general, (13.6%) of those who were interviewed were illiterate compared to (31.6%) who were either blind or visually impaired. Illiteracy rate amongst the blind and visually impaired is higher than the rate in the general population (13.9%) as quoted by the PCBS (2003). The higher percentage of illiteracy amongst the blind and visually impaired can be explained by the relative old age of the group as (79%) of those were 50 years old and over.

Amongst those interviewed only (37.4%) were employed. This percentage is lower than that of the general population (58.3%) as indicated by the PCBS (2002).

Amongst those who were visually impaired (14%) were employed compared to (0%) amongst those who were blind. This may highlight the stigma that our society may hold against such individuals. In addition, lack of rehabilitation services for this type of disability, and inaccessibility of the disabled for educational and vocational training institutions in general might have contributed to this low rate of employment.

For those who were blind (84%) lived either in rural areas or in camps compared to (82%) of those who were visually impaired. This high percentage might have been due partly to the fact that four out of the six clinics were held in either rural areas or camps. However, there is an established relationship between poverty and blindness and that people living in camps and rural areas may be worse off financially than those living in urban areas. In addition, accessibility is an added factor as more health services are available in urban areas than rural areas.

Fraser and Wormold (2001) studied social and demographic risk factors on late presentation of eye disease in a deprived north London area. They concluded that

area and individual level deprivation were both associated with late presentation of eye diseases with a subsequent risk of blindness. It could be further argued that people living in rural areas and or camps are more susceptible to eye disease due to greater exposure to sunlight and the nature of their work such as agricultural work in rural areas.

B. Conclusion

Un-operated cataract remains the leading cause of blindness and visual impairment in Palestine and other Middle Eastern countries. Diabetic retinopathy became prevalent being the second most common cause of visual impairment and blindness.

Patients' accessibility to ophthalmic care is very poor due to financial hardship, unavailability of the services and poor knowledge about eye diseases and eye services in general.

The older population appears to carry most of the burden as most blinding eye diseases are very prevalent amongst this age group.

The results of this study can be utilized by planners at St John Eye Hospital in order to seriously consider establishing satellite eye clinics with more emphasis on remote and rural areas. The outreach mobile clinic which is currently held twice a week may need to be reviewed keeping in mind the high demand and poor accessibility to the service.

This study also highlights the need for more effective planning at the national level to promote seemingly forgotten but essential eye services.

C. Implication for health care planners.

This study has highlighted major shortcomings in the delivery and availability of ophthalmic care in Palestine. The following are the researcher's recommendations that aim to promote ocular health amongst Palestinians:

1. Creating demand for ophthalmic services by providing affordable and accessible services. This requires increasing awareness, targeting cost and improving the quality of the services provided.

1. Occupational therapy
2. Typing and reading Braille
3. Mastering activities of daily living such as walking, cleansing, eating, drinking etc
4. Others please specify.....

11. Who delivers/delivered the service/s? Please choose what applies.

1. Social services
2. Other ministry of health personnel.
3. St. John Eye Hospital.
4. Private clinics and or centre
5. Others, please specify.....

12. Do you know of any ophthalmologist in your area of residence?

1. Yes, please mention one.....go to question 13
2. No, go to question 14.

13. How far is the nearest ophthalmologist from your place of residence?

1. 0-10 km
2. 11-20 km
3. more than 20 km

14. When was the last time you visited an ophthalmologist? Please choose one

1. Never
2. Less than 6 months ago
3. 6-11 months
4. 12-24 months
5. More than 24 months ago.

15. What type of health insurance do you possess? Please choose what applies.

1. PA medical insurance
2. UNRWA medical insurance

6. What was the cause of the trauma? Please choose one

1. Accident at home
2. Work place related accident
3. Intifada injury
4. Road traffic accident
5. Others, please specify.....

Section two

7. For how long have you had poor vision? Please circle one

1. Less than one year
2. 1-2 years
3. More than two years

8. In your opinion what is/are the cause/s of your vision impairment or blindness? Please choose what applies.

1. Do not know
2. Cataract
3. glaucoma
4. Diabetes
5. Trauma
6. Hereditary
7. Amblyopic and refractive error
8. Degenerative eye disease
9. Othersplease specify

9. Have you received any form of rehabilitation services following the reduction of your vision?

1. Yes, go to question 10.....
2. No , go to question 12.....

10. What type of service did/do you receive? Please choose what applies.

Questionnaire

Section one (to be completed by the researcher and the medical team).

1. What is the patient's card no?.....

2. What is the patient's current visual acuity?

1.Right eye.....

2.Left eye.....

3. What is the patient's best corrected visual acuity?

1. Right eye.....

2. Left eye.....

4. Which of the following best describes the patient's visual status?

Please circle one

1. Acceptable vision $\geq 6/18$go to question 12

2. Visual impairment $6/18 > VA \geq 3/60$go to question 5

3. Blind $VA < 3/60$go to question 5

5. Based on your professional judgment what is/are the cause/s of the patient's blindness or visual impairment? Please circle one.

1. Trauma.....go to question 6.

2. Un-operated cataract.....go to question 7

3. Post cataract surgery.....go to question 7

4. Diabetic retinopathy.....go to question 7

5. Glaucoma.....go to question

6. Hereditary.....go to question 7

7. Amblyopic and refractive errors.....go to question 7

8. Others, please specify.....go to question 7

Appendices

2. Development of ophthalmic human resources by training more ophthalmic medical and nursing staff who are able to provide high quality service.
3. Promoting cataract community surgical services that are close to the patient's area of residence. This should be available at an affordable price.
4. Establishing community rehabilitation centers for those with visually impairment and blindness to enable them to be more independent and productive members of the society.
5. Increasing public awareness regarding eye health and the prevention of eye disease and compliance with treatment. State regulations are also needed regarding health and safety at work.
6. More co-ordination and collaboration is needed between the various ophthalmic health care providers (government, NGO, UNRWA and private sector) to provide the desirable services away from duplication and fragmentation.

D. Implications for future ophthalmic research in Palestine

- Replication of this study for comparison may be beneficial after 5 years.
- A population-based survey to examine causes and prevalence of blindness and visual impairment may prove beneficial.
- A qualitative study to examine quality of life for those with visual impairment and blindness may shed more light on their suffering and struggle in their dark world.

3. Private medical insurance
4. Israeli medical insurance
5. Others please specify.....

Section three

16. What is your gender? Please choose one

1. Male
2. Female

17. Which of the following categories best describe your age? Please circle

one

1. 10-19 years
2. 20-29 years
3. 30-39 years
4. 40-49 years
5. 50-59 years
6. 60-69 years
7. ≥ 70 years

18. What is your marital status? Please choose one

1. Single,.....go to question 20
2. Married,.....go to question 19
3. Divorced, go to question 19
4. Widower, go to question 19.

19. Are you and your partner related? Please choose one

1. Yes.....please specify relation.....
2. No

20. Does any of your family suffer from eye diseases? Please choose one

1. Yes.....please specify who.....go to question 21.
2. Nogo to question 22.

21. Which of the following eye condition does your relative suffer from? Please choose what applies

1. I do not know
2. Glaucoma
3. Cataract
4. Squint
5. Diabetic eye disease
6. Amblyopia and refractive errors
7. Hereditary eye disease
8. Trauma
9. Degenerative eye disease
10. Others.....please specify.....

22. Are your parents related? Please choose one.

1. Yes.....please specify relation.....
2. No

23. What has been the main obstacle, if any, for you in receiving effective eye care? Please choose one.

1. No obstacles
2. Financial
3. Unavailability of the service in your area of residence
4. Knowledge deficit regarding eye diseases.
5. Others please specify.....

24. Which of the following educational levels have you reached? Please circle one.

1. Can not read or write
2. Less than or Tawjehi
3. College or university.

25. Where do you live? Please circle one

1. City
2. Town/village
3. Camp
4. Others, please specify.....

26. Are you currently working? Please circle one

1. Yes.....please go to question 27
2. No.....please go to question 28

27. What is your current work? Please choose all that apply.

1. Self employed
2. Professional
3. Worker
4. Others please specify.....

28. Which of the following categories best describes your family's total monthly income? Please choose one

1. \$00-499
2. \$500-999
3. \$1000-1499
4. \geq \$ 1500

End of questionnaire

Thank you

Appendix 2:

St John Eye Hospital Financial Statement

	BUDGET 2000	BUDGET 2001	BUDGET 2002
	£000	£000	£000
INCOMING RESOURCES	1468.1	1468.1	1468.1
Donations and gifts	185.4	185.4	185.4
Legacies receivable	120.6	120.6	120.6
Net grants receivable	824.3	824.3	824.3
Investment income	716.7	716.7	716.7
Charitable activity income	52.3	52.3	52.3
Other income			
Total Incoming Resources	3367.4	3367.4	3367.4
RESOURCES EXPENDED			
Direct charitable expenditure	3728.5	3728.5	3728.5
Charitable activity costs			
Other expenditure	0.0	0.0	0.0
Fund raising and Publicity	0.0	0.0	0.0
Administration	0.0	0.0	0.0
Total resources expended	3728.5	3728.5	3728.5
NET (OUTGOING)/ INCOMING RESOURCES BEFORE TRANSFERS	(361.1)	(361.1)	(361.1)
Tran	0.0	0.0	0.0
Transfers between funds	(361.1)	(361.1)	(361.1)
NET (OUTGOING)/ INCOMING RESOURCES			
Other recognized gains and losses			
Gains and (losses) on investment assets	0.0	0.0	0.0
Realized			
Unrealized	0.0	0.0	0.0
Net investment gains	(361.1)	(361.1)	(361.1)
NET MOVEMENT IN FUNDS			

SOURCE: St John Eye Hospital Strategic Plan 2000-2005.

Appendix. 3: Human Resources at ST John Eye Hospital.

HOSPITAL STAFF ESTABLISHMENT

30/Mar/00

CHIEF EXECUTIVE OFFICER	1
MEDICAL DIRECTOR	1
OPHTHALMIC SURGEONS (3 VACANCIES)	7
OPHTHALMOLOGIST	1
TRAINEES	3
ANESTHETISTS	3
PART TIME (ONE VACANCY)	6
ORTHOPTIST	2
PHARMACIST	1
CONTACT LENS PRACT.PART TIME	1
OPTOMETRIST	1
REFRACTIONIST	1
TOTAL	<u>27</u>

NURSING DIRECTOR (MATRON)	1
SENIOR SISTER'S / CHARGE NURSES	6
NURSING SCHOOL TUTORS	2
JUNIOR SISTER'S /CHARGE NURSES	5
STAFF NURSES	3
LICENCED PRAC. NURSES	31
OPHTHALMIC NURSES	15
SENIOR PRAC. NURSES	3
CSSD SISSTENT SUPERVISOR	1
CSSD WORKERS	2
OPHTHALMIC TECHNICIANS	2
NURSING STUDENTS	8
TOTAL	<u>79</u>

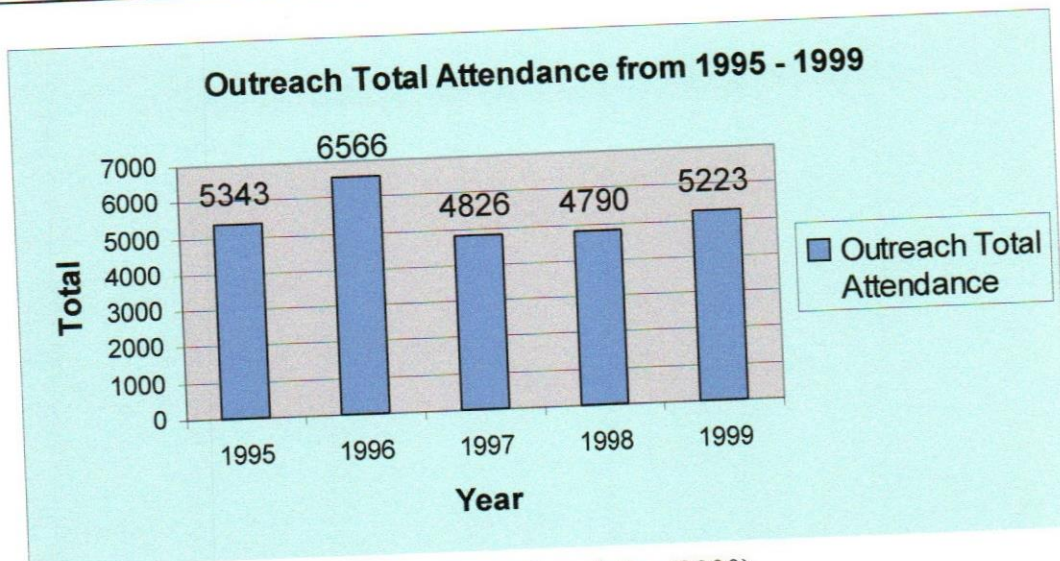
SUPERINTENDENT	1
DEPUTY SUPERINTENDENT	1
HOSPITAL ACCOUNTANT	1
ACCOUNTS CLERK	2
STEWARD	1
RECORD OFFICE SUPERVISOR	1
HOUSEKEEPER	1
MEDICAL ENGINEER	1
MAINTENANCE	4
SECRETARIES	4
CLINIC CLERKS	5
DRIVERS	2
DRESSMAKERS	1
COOKS / KITCHEN WORKERS	9
LAUNDRY	3
TELEPHONISTS	2
GUARDS	6
GARDENERS	2
CLEANERS	11
THEATRE PORTERS	2
PART TIME STAFF	2
TOTAL	<u>62</u>
GRAND TOTAL	<u>169</u>

St John Eye Hospital Strategic Plan 2002-2005.

Appendix 4

Outreach total attendance from 1995-1999

Year	1995	1996	1997	1998	1999
Outreach Total Attendance	5343	6566	4826	4790	5223



Outreach statistics. St John Eye Hospital statistics (2000)

Outreach clinic attended 1995-1999

Year	1995	1996	1997	1998	1999
Outreach Clinics Attended	87	96	89	95	103

Outreach statistics. St John Eye Hospital statistics (2000).

Consent Form

Dear client:

I am a health care professional working in the field of ophthalmology. I would like to conduct a study as part of my course requirements for the Masters degree in public health at Al Quds University. The study aims to explore the causes of visual impairment and blindness in Palestine. This study would enable us to determine the main causes of visual impairment and blindness and help to identify certain groups who might be at risk.

Your participation in this study is voluntary and you can withdraw or refuse to continue at any time during this study. There will be no harm done to you and your participation will by no means affect the care you will receive.

We will ask certain questions about your experience and your eye health in general.

The Dr and a nurse will carry out routine eye examinations and the data from examination will be recorded on a special form.

You will be interviewed in privacy and the information gathered will be treated with confidentiality. Once completed I plan to present this study findings to hospital medical and nursing staff. Your identity will remain anonymous at all stages of the study.

If you have any questions please do not hesitate to ask any member of the nursing staff at any time.

If you agree to participate in this study please sign below.

Namesignature.|.....date.....

Request for an ethical approval to conduct research

Research ethical committee
St John eye Hospital
Jerusalem

Dear Colleagues:

I am writing to you in request for your approval to conduct a study concerning patients seen on the outreach clinic.

This study aims to identify causes of Blindness and visual impairment amongst patients attending the clinic over a period of three months. This study will be conducted in partial fulfillment of a master Degree in Public Health Management at Al Quds University.

I have enclosed a mini proposal which outlines study objectives and methodology.

Every patient will receive explanation prior to the interview and will be requested to sign a consent form to participate in the study.

The researcher will interview all patients and use routinely collected medical data recorded by nurses and doctors.

On completion the hospital staff will have full access to the results.

I hope this proposal will receive your approval.

Meanwhile, please do not hesitate to contact me if you need further information.

Thank you

Ahmad Ma'ali

Lecturer Practitioner.

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