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# Factors Associated with Medication Adherence among Postoperative Patients' Undergoing Cataract Surgery

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**Abstract:** Cataract is rising as a global health issue. Adherence to recommended medication after surgery is challenge for patients and recognized as an essential component of the management of after cataract surgery. Following cataract surgery, patients are typically prescribed antibiotic, non-steroidal anti-inflammatory drug and corticosteroid eye drops, each of which may be administered with a different frequency. On the other hand, patients' non compliances with prescribed treatment lead to a less than ideal outcome, with potential complications such as infection or inflammation. Numerous studies have been conducted to evaluate the extent of patients noncompliance and to identify contributing factors. Aim of the study to identify factors associated with medications adherence among postoperative Patients undergoing Cataract Surgery. This study was conducted at Ophthalmology out-patients clinic at Alexandria Main University Hospital, Alexandria, Egypt. This is a descriptive study. The subjects of this study comprised a convenient sample of 100 adult patients undergoing cataract surgery. Two tools were used to collect the necessary data Tool I: Bio-socio-demographic data structured questionnaire: this tool was developed by the researcher after review of relevant literature and it was used to obtain information about bio-socio-demographic and clinical data of the studied patients. Tool II: Factors Associated with postoperative cataract Patients' Adherence to Medications Checklist. One hundred adult patients on the ophthalmology department were selected, data was collected within seven months. It was conducted throughout patients' personal interview during the patients' visits at the study setting. From the obtained results, 100% of studied patients have low <60% adherence to post-operative medications related to educational, social and economic dimensions and health care system dimensions. Also the majority of studied patients have low adherence to post-operative medications related to therapy related dimensions and physical factors as 93% and 84% respectively. But 38% of studied patients have moderate 60%-<75% adherence to post-operative medications related to psychological and behavioral factors. While as more than half have (65%) of studied patients have high ≥75% adherence to post-operative medications related to condition related dimensions. On the other hand the results revealed that there were significant association between total score of the age, sex, educational level, occupation, financial and residence status of studied patients and their adherence for total scores of all factors dimensions associated with medications $t=3.935^{*}$ ($<0.001^{*}$), $t=7.497^{*}$ ($<0.001^{*}$), $F=12.326^{*}$ ($<0.001^{*}$), $F=41.087^{*}$ ($<0.001^{*}$), $F=3.097$ (0.050) and $t=8.757^{*}$ ($<0.001^{*}$) respectively. finally there were significant association between the total scores of clinical data as ocular history, associated disease and prescribed medications of studied patients and their over all adherence to all factors dimensions associated with medications as $F= 19.783^{*}$ ($<0.001^{*}$), $F=30.478^{*}$ ($<0.001^{*}$), $F=30.478^{*}$ ($<0.001^{*}$), respectively. It can be concluded that, the majority of the studied patients with cataract surgery were poorly adherent to their medications related to associated factors low educational, social and economic factors and effect of physical, psychological& behavioral factors. Nurses should assess the psychosocial related issues for patients undergoing cataract surgery and put in their plan of care Also, medication related issues including therapeutic action, dose and precautions should be discussed by nurses before patients hospital discharge in order to increase their awareness and promote adherence for post-operative medications and improve their health outcomes.

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**Key word:** Cataract · Medications · Adherence

## INTRODUCTION

Cataract is a clouding or opacity of the eye lens that leads to gradual painless blurring and eventually loss of vision, the opacity can develop in various part of the lens, the WHO estimated that in 1990 of the 38 million blind people in the world cataract accounted for 41.8% nearly 16 million people. Cataracts rank behind rheumatoid arthritis and coronary disease as a leading cause of disability which affect 20.5 million American who are 40 years of age or older, globally, the leading causes of vision impairment are uncorrected refractive errors and cataracts [1-3].

According to WHO cataract is the third leading cause of blindness in the world (WHO 2000), throughout the world the elderly population for the period 1980-2020 the projected increase in the elderly population for the developed world is 186% while in the developing countries the projected increase is 356%, on this basis the WHO estimated that there will be 54 million blind people aged 60 years or older by the year 2020 [3-6]. In addition, in Egypt, cataract is the major cause of blindness of the population aged 65 years or older. Inadequate postoperative nursing care may lead to serious complications for the patients with cataract surgery [5].

Cataract is a multifactorial disease in which; aging, toxic, nutritional, physical factors, other ocular condition and other systemic diseases. Increase age is the most important risk factors for development of cataract which is called senile cataract it characterized by increase weight &thickness, decrease accommodative power of lens, chemical modification which produce progressive pigmentation, aggregation into high molecular-weight protein in which lens take a yellowish or brownish hue, in addition to decrease concentration of glutathione& potassium, increase concentration of sodium and calcium and finally increase hydration [7].

Postoperative cataract patients' inexperienced with eye drops use showed a poor instillation technique that affect adherence to medications administration which can be defined as a ratio of the number of drugs doses taken to the number of doses prescribed over a given period of time [8, 9]. Furthermore WHO defined adherence as "the degree to which the person's behavior corresponds with the agreed recommendations from a health care provider" [10].

Poor medications adherence is a serious barrier to successful chronic diseases management [11]. There are several types of non-adherence. The first are primary non adherence, in which providers write prescription but the medication is never filled or initiated. A second type of non-adherence is non-persistence in which patients decide to stop taking a medication after starting it, without being advised by a health professional to do so. This type is rarely intentional and happens when patients and providers miscommunication about therapeutic plans. Unintentional non adherence result from limitations that prevent patients from follow treatment recommendations as cost, competing demands and sometimes involves individual constraints as problems remembering doses [10].

WHO had classified factors associated with non-adherence into five domains: the socioeconomic, healthcare system, condition-related, therapy related and patients related factors [12]. There are many factors that have been shown to contribute to patients medications adherence, such as type and dose, route of administration, disease duration, severity of manifestations and medication side effects. Sport systems, patients-health care provider communication and personal understanding of illness [13].

Finally management of patients with cataract is multidisciplinary effort, in which nurses are increasingly undertaking much of nursing care surrounding the surgical procedure. Postoperative care as "an integral part of cataract management, with the objectives of minimizing patients discomfort and pain, preventing injury and complications and improving surgical and vision outcomes". The nurse plays a significant role in caring for patients undergoing cataract surgery during preoperative and postoperative period in which defined as "an integral part of cataract management, with the objectives of minimizing patients discomfort and pain, preventing injury and complications and improving surgical and vision outcomes" in the areas of counseling, advice following surgery and -management of postoperative complications and adherence to medications [14, 15].

**Aim of the Study:** The study aimed to identify factors associated with medication adherence among postoperative Patients undergoing cataract Surgery.

**Significance & Justification:** The prevalence of cataracts it occur in aged people between 65 and 74 years old by about 50% of cases and it increased to 70% in people over the age of 75 years old [16]. The only treatment for cataract is surgical removal of the opacified lens and replacement it with permanent artificial intraocular lens. More than 13 million cataract surgeries were performed globally in 2013 [17].

**Research Question:** What are the factors associated with medication adherence of patients post- operative cataract Surgery?

## MATERIALS AND METHODS

### Materials

**Research Design:** A descriptive research design was utilized to conduct this study.

**Setting:** This study was conducted at Ophthalmology out-patients clinic at Alexandria Main University Hospital, Alexandria, Egypt.

**Subjects:** A convenient sample comprised of 100 adult patients undergoing cataract surgery, were included in the study according to the following criteria:

- Adult patients (aged 21-65 years).
- Both sexes.
- Had cataract only without other eye problems.
- Able to communicate verbally.

### Sample Size

**Sample Size Calculation:** EPI INFO program was used to estimate the sample size applying the following parameters:

- Population size = 360 for 3 months.
- Expected frequency = 50%
- Acceptable error = 10%
- Confidence co-efficient = 97%
- Minimum sample size = 89

**Tools of the Study:** In order to fulfill the aim of the study, two tools were used for data collection.

**Tool I: Bio-socio-demographic Data Structured Questionnaire:** It was developed by the researchers based on review of the recent relevant literature [18]. To obtain information about bio-socio-demographic data of the studied patients. It consisted of two parts as the following:

**Part I: Socio-demographic Data:** This part was used to collect data about the patients' socio-demographic characteristics. It included; age, sex, residence, marital status, level of education, occupation and monthly income from the patients' point of view.

**Part Ii: Patients' Clinical Data:** This part was utilized to obtain data about the clinical history of the patients such as; onset of the disease (Years), family history of cataract, type of cataract surgery and the type of prescribed medications.

**Tool II: Factors Associated with postoperative cataract Patients' Adherence to Medications Checklist:** This tool was developed by the researcher after reviewing the relevant related literature [19-22]. It was used to assess factors associated with cataract patients' adherence to medications. It is covered 42 statements of five main dimensions as follows: educational, social and economic Dimensions (12 items), Health care system dimensions which consist of (10 items), Condition related dimensions (3 items), therapy related dimensions (5 items) and patients related dimensions related to physical factors which consist of (4 items) related to the physical condition of patients as well as psychological & behavioral factors related dimensions (8 items) related to general psychological & behavioral conditions of patients. All42 statements with Yes or No answer. It was calculated as number and percent by using scoring system.

**Scoring System:** Patients who had score less than 60% was classified as poorly adherent, 60 to less than75%moderately adherent and 75 to 100% highly adherent.

**Method:**

- An official permission was secured from the study setting administrative staff to carry out the study after explanation of the study aim.
- Tool I and II were developed by the researcher based on review of relevant literature
- The study tools were revised by five experts in the fields of Medical Surgical Nursing and Medical Ophthalmology to test the tools for content validity, completeness and clarity of the items and then the necessary modifications were carried out accordingly.
- Reliability of the tools was tested using Cronbach's alpha test (= 0.84) which indicated that, the tools were reliable.
- A pilot study was conducted on 10 patients who fulfilled the inclusion criteria to test the clarity, objectivity, feasibility, relevancy and applicability of the study tools. Accordingly, the necessary modifications were done. These patients were not included in the study sample.

**Data Collection:**

- Data was collected within seven months, during the period between February and August 2019.
- The researcher met patients in Ophthalmology department before discharge, took a permission to conduct in the research &followed in outpatient clinic
- Data was conducted throughout patients' personal interview during the patients visits at the study setting.
- The researcher collected data using the study tools by interviewing every patients on an individual base in the waiting room of the out-patients clinic for 20-30 minutes.
- The studied patients' socio-demographic and clinical data were initially obtained using tool I.
- The total score of tool II was calculated for all patients of the study sample and accordingly the studied patients' were classified into three groups which were poorly, moderately and highly adherent to cataract medications.
- The studied patients in the three groups were assessed using tool II and a comparison was conducted to evaluate the differences between them in relation to the factors associated with their adherence to postoperative cataract medications.

**Ethical Considerations:** An ethical Committee permission was obtained to conduct the study. The purpose of the study was explained to all the studied patients. Their approval and readiness to be included in the study were obtained initially before participation. All patients were assured about the privacy and confidentiality to participate in the study.

**Statistical Analysis:** Data were fed to the computer and analyzed using IBM SPSS software package version 21 [23]. Variables were summarized by frequency and percent.

Qualitative data were described by Mean with Standard deviation. Quantitative data were described using range (minimum and maximum), mean, standard deviation. Significance of the obtained results was judged at the 5% level.

**Student T-Test:** For normally distributed quantitative variables, to compare between two studied groups. F-test (ANOVA): For normally distributed quantitative variables, to compare between more than two groups.

**Pearson Coefficient:** To correlate between two normally distributed quantitative variables. All statistical tests were judged at 0.05significance level.

## RESULTS

Table (1): shows number and percentage distribution of demographic characteristics among studied patients. It was noticed that more than half of studied patients (74%) were in the age group from 50 <60 years old. And about (54%) of them are female live in urban area. Furthermore, Majority of the studied patients (89%) were married and illiterate. Concerning occupation the result founded that about half of studied patients (55%) their work were clerical, while 44% of them their financial state not enough As regards the care giver at home the results revealed that about half of patients take care for

Table 1: Number and percentage distribution of demographic characteristics among studied patients (n = 100)

| Variable | No. | % |
|---|---|---|
| Age | | |
| 40 <50 | 26 | 26.0 |
| 50 <60 | 74 | 74.0 |
| Gender | | |
| Male | 46 | 46.0 |
| Female | 54 | 54.0 |
| Marital status | | |
| Single | 2 | 2.0 |
| Married | 89 | 89.0 |
| Widow | 9 | 9.0 |
| Education | | |
| Illiterate | 87 | 87.0 |
| Read & write | 4 | 4.0 |
| Basic Education | 4 | 4.0 |
| Secondary Education | 5 | 5.0 |
| Occupation | | |
| Professional | 4 | 4.0 |
| House wife | 44 | 44.0 |
| Clerical work | 52 | 52.0 |
| Financial State | | |
| Not Enough | 43 | 43.0 |
| Enough | 39 | 39.0 |
| More than enough | 18 | 18.0 |
| Residence | | |
| Urban | 54 | 54.0 |
| Rural | 46 | 46.0 |
| Caregiver for patients at home | | |
| No one (myself) | 51 | 51.0 |
| One of the family members | 49 | 49.0 |
| The caregiver 's level of education | | |
| Illiterate | 20 | 20.0 |
| Read & write | 55 | 55.0 |
| Basic Education | 21 | 21.0 |
| Secondary Education | 4 | 4.0 |

Table 2: Number and percentage distribution of clinical data among studied patients (n = 100)

| Variable | No. | % |
|---|---|---|
| Diagnosis | | |
| Traumatic cataract | 8 | 8.0 |
| Senile cataract | 87 | 87.0 |
| Complicated cataract | 5 | 5.0 |
| Ocular history | | |
| None | 18 | 18.0 |
| Eye trauma | 2 | 2.0 |
| Inflammation | 4 | 4.0 |
| Amblyopia | 60 | 60.0 |
| Glucoma | 4 | 4.0 |
| Optic nerve or retinal disease | 12 | 12.0 |
| Associated disease | | |
| None | 12 | 12.0 |
| Diabetes Mellitus | 38 | 38.0 |
| Hypertension | 47 | 47.0 |
| Ischemic heart disease | 3 | 3.0 |
| Prescribed medications | | |
| None | 12 | 12.0 |
| Hypoglycemic agent | 38 | 38.0 |
| Antihypertensive | 47 | 47.0 |
| Cardiac agent | 3 | 3.0 |

them self while 44% of them take their care through their member of family In addition, it was noticed that about half care giver who take care for the studied patients their level of education were read and write.

Table1 (2): Shows number and percentage distribution of medical data among studied patients. The results revealed that, the majority of studied patients (87%) have diagnosed senile cataract and 60% of studied patients have ocular disease history of amblyopia, Concerning associated disease the results illustrated that, less than half (44%) of studied patients with cataract have hypertension and administrate hypertensive drugs while as38% of them have diabetes mellitus and administrate hypoglycemic drugs.

Table (3): illustrates number and percentage distribution of factors dimensions associated with medication adherence among postoperative patients undergoing cataract surgery Regarding educational, social and economic dimensions the results revealed that, two third of studied patients mentioned that they have not ability to read & understood the medical guidelines for treatment, Moreover, more than half of studied patients mentioned that, the medical terminology of drug prescription is not understood, there is a difficulty in transportation to go to the health institution to follow up and, the name list of treatment in a day so full that they can forget some names 53%, 56% and 56% respectively.
On the other hand, the results noticed that 100% of studied patients mentioned that. The doctor does not give instructions and advice on treatment to their family members, but for them while as more than half of them 56% they mentioned that their family members help them to take medication regularly, furthermore the majority of studied patients 98% mentioned that the medicine is sometimes too expensive to buy.

Regards health care system dimensions, the results illustrated that, all of studied patients 100% stated that, the doctor does not show to them all the available medicines for cataract treatment and see their opinion before the prescription, Also the majority of the studied patients stated that, The doctor does not explains to them how to use the treatment and the importance of its use and side effects and how to deal with them, the doctor does not give them the opportunity to ask questions and answer them, their doctor and nurse will not motivate them to take their medication regularly, 94, 94 and 95% respectively.

Although, the majority of the studied patients mentioned that, The doctor's instructions on how to use medicine are unclear and understandable and The doctor is sometimes absent on the follow-up days as 79%, 90% respectively, Also 95% of them stated that, The doctor who first examined them is not he who follows them up every visit.

Condition- related dimension, the results founded that, the majority of studied patients stated that, they don't think that this disease is chronic and can be cured, Symptoms does not increase despite taking medicine and taking medications will not cause them psychological problems such as depression as 73%, 94% and 84% respectively.

In Addition to therapy related dimensions the results showed that, all 100% of studied patients mentioned that, the number of drugs and their dose is so many per day. And the majority of them stated that, the treatment period is long so they can't take it regularly and taking medication regularly affects their daily life activities such as blurred vision as 90% and 77% respectively While as, more than two third of studied patients mentioned that, the doctor constantly does not change the treatment regimen and the drug does not cause unwanted side effects as 74 and 82%, respectively.

Finally as a patients related dimension, related to physical factors the results illustrated that the majority of patients mentioned that they having hearing problems, memory problems and they have problems with movement that makes them unable to take medicine or bring it from the pharmacy but all of studied patients (100%) stated that they Having vision problems makes them unable to read the instructions for using the medicine.

Table 3: Number and percentage distribution of Factors dimensions Associated with Medication Adherence among postoperative Patients undergoing Cataract Surgery group (n=100)

| | | Yes | | No | |
|---|---|---|---|---|---|
| | Variable | No. | % | No. | % |
| 1- | Educational, social and economic dimensions | | | | |
| 1 | The medical terminology, the doctor uses during treatment prescription, is not understood | 53 | 53.0 | 47 | 47.0 |
| 2 | You have the ability to read and understand the medical guidelines for treatment | 26 | 26.0 | 74 | 74.0 |
| 3 | The doctor gives instructions and advice on treatment to the family members, but not to you | 0 | 0.0 | 100 | 100.0 |
| 4 | Family members help you to take medication regularly | 56 | 56.0 | 44 | 44.0 |
| 5 | There is a difficulty in transportation to go to the health institution to follow up | 56 | 56.0 | 44 | 44.0 |
| 6 | The name list of treatment in a day so full that they can forget some names | 56 | 56.0 | 44 | 44.0 |
| 7 | The pharmacy is in a place that is some time too difficult for you to reach to buy medicine. | 60 | 60.0 | 40 | 40.0 |
| 8 | Health care institutions are far away from home | 48 | 48.0 | 52 | 52.0 |
| 9 | You have health insurance providing you with medicine | 70 | 70.0 | 30 | 30.0 |
| 10 | the medicine is sometimes too expensive to buy | 98 | 98.0 | 2 | 2.0 |
| 11 | You have no desire to take medicine because of some thoughts such as: -The drug is only analgesic and does not treat the disease -Using herbs is better than medicine | 46 | 46.0 | 54 | 54.0 |
| 12 | You Increase, decrease or stop the dose without the doctor's advice | 44 | 44.0 | 56 | 56.0 |
| 2- | Health care system dimensions | | | | |
| 1 | Doctor shows to you all the available medicines for cataract treatment and see your opinion before the prescription | 0 | 0.0 | 100 | 100.0 |
| 2 | Doctor explains to you how to use the treatment and the importance of its use and side effects and how to deal with them | 6 | 6.0 | 94 | 94.0 |
| 3 | Doctor gives you the opportunity to ask questions and answer them | 6 | 6.0 | 94 | 94.0 |
| 4 | Your doctor and nurse will motivate you to take your medication regularly | 5 | 5.0 | 95 | 95.0 |
| 5 | Your follows up health institution holds educational sessions about the necessity of commitment to taking medicine and how to take it | 25 | 25.0 | 75 | 75.0 |
| 6 | Doctor's instructions on how to use medicine are unclear and understandable | 79 | 79.0 | 21 | 21.0 |
| 7 | More than one medicine are prescribed by the doctor to be taken at the same time | 100 | 100.0 | 0 | 0.0 |
| 8 | Doctor is sometimes absent on the follow-up days. | 90 | 90.0 | 10 | 10.0 |
| 9 | You sometimes skip some visits because of the long time waiting in the clinic | 42 | 42.0 | 58 | 58.0 |
| 10 | Doctor who first examined you is he who follows you up every visit | 5 | 5.0 | 95 | 95.0 |
| 3- | Condition-Related dimensions | | | | |
| 1 | You think that this disease is chronic and can't be cured | 27 | 27.0 | 73 | 73.0 |
| 2 | Symptoms increase despite taking medicine | 6 | 6.0 | 94 | 94.0 |
| 3 | Taking medications will cause you psychological problems such as depression | 16 | 16.0 | 84 | 84.0 |
| 4- | Therapy related dimensions | | | | |
| 1 | The number of drugs and their dose is so many per day. | 100 | 100.0 | 0 | 0.0 |
| 2 | The treatment period is long so you can't take it regularly | 90 | 90.0 | 10 | 10.0 |
| 3 | The doctor constantly changes the treatment regimen | 26 | 26.0 | 74 | 74.0 |
| 4 | The drug causes unwanted side effects | 18 | 18.0 | 82 | 82.0 |
| 5 | Taking medication regularly affects daily life activities such as blurred vision | 77 | 77.0 | 23 | 23.0 |

| | | Yes | | No | |
|---|---|---|---|---|---|
| 5. | Patients related dimensions | No. | % | No. | % |
| A. | Physical factors | | | | |
| 1 | Having vision problems makes you unable to read the instructions for using the medicine | 100 | 100.0 | 0 | 0.0 |
| 2 | Having hearing problems that make it difficult to communicate with your doctor | 64 | 64.0 | 36 | 36.0 |
| 3 | Having memory problems that make you forget some doses or take overdoses | 56 | 56.0 | 44 | 44.0 |
| 4 | You have problems with movement that makes you unable to take medicine or bring it from the pharmacy. | 80 | 80.0 | 20 | 20.0 |
| B. | Psychological and behavioral factors | | | | |
| 1 | You have information about the disease | 49 | 49.0 | 51 | 51.0 |
| 2 | Know the severity of the disease and its complications | 42 | 42.0 | 58 | 58.0 |
| 3 | Know what the reasons for the need for the drug | 42 | 42.0 | 58 | 58.0 |
| 4 | Expect that treatment is not beneficial and doesn't have a positive result for the disease | 100 | 100.0 | 0 | 0.0 |
| 5 | You are aware of the importance of taking the treatment regularly | 4 | 4.0 | 96 | 96.0 |
| 6 | You have self- confidence to be committed to the follow-up schedule and having the treatment regularly. | 100 | 100.0 | 0 | 0.0 |
| 7 | Depends on the motivation of others to take treatment | 35 | 35.0 | 65 | 65.0 |
| 8 | Feel stress, anger and anxiety when taking treatment | 59 | 59.0 | 41 | 41.0 |

Table 4: Total percent score of Factors dimensions Associated with medication adherence among postoperative studied Patients undergoing cataract Surgery in group (n = 100)

| Variable | Total Score | Percent Score |
|---|---|---|
| Educational, social and economic dimensions | | |
| Min.-Max. | 4.0-7.0 | 33.33-58.33 |
| Mean ± SD. | 5.91±1.02 | 49.25±8.47 |
| Health care system dimensions | | |
| Min.-Max. | 1.0-4.0 | 10.0-40.0 |
| Mean ± SD. | 2.26± 0.94 | 22.60±9.39 |
| Condition-Related dimensions | | |
| Min.-Max. | 0.0-3.0 | 0.0-100.0 |
| Mean ± SD. | 2.51± 0.81 | 83.67±27.01 |
| Therapy related dimensions | | |
| Min.-Max. | 0.0-3.0 | 0.0-60.0 |
| Mean ± SD. | 1.41± 0.68 | 28.20±13.66 |
| Patients related dimensions | | |
| a. Physical factors | | |
| Min.-Max. | 0.0-3.0 | 0.0-75.0 |
| Mean ± SD. | 1.0 ±1.12 | 25.0 ±27.98 |
| b. Psychological and behavioral factors | | |
| Min.-Max. | 1.0-5.0 | 12.50-62.50 |
| Mean ± SD. | 3.43±1.39 | 42.88±17.34 |
| Overall adherence to all factors dimensions | | |
| Min.-Max. | 9.0-19.0 | 21.43- 45.24 |
| Mean ± SD. | 16.52±2.01 | 39.33±4.78 |

As Psychological and behavioral factors, the results revealed that, more than half of studied patients mentioned that they haven't information about the disease, they did not know the severity of the disease and its complications and they did not know what the reasons for the need for the drug as 51%, 58% and 58% respectively. But 100% of studied patients stated that expect that treatment is not beneficial and doesn't have a positive result for the disease. Moreover, more than half of studied patients stated that they does not depend on the motivation of others to take treatment, feeling stress, anger and anxiety when taking treatment while the majority of them stated that they aren't aware of the importance of taking the treatment regularly.

Table (4): Illustrates that, total percent score of factors dimensions associated with medication adherence among postoperative studied patients undergoing cataract surgery, the results revealed that about 83.67± 27.01 percent score of studied patients adhere to post-operative medications related to condition related factors dimension with total score Min.-Max=0.0-3.0. Mean ± SD=. 2.26 ± 0.94. Although 49.25±8.47 percent score of studied patients adhere to post-operative medications related to Educational, social and economic dimensions with total score Min. Max. = 4.0-7.0, Mean ± SD.= 5.91 ± 1.02 and 42.88±17.34 percent score of studied patients adhere to post-operative medications related to Psychological and behavioral factors of patients related dimensions. On the other hand, overall adherence of studied patients to post-operative medications percent score= 39.33±4.78 related to all factors dimensions with Min. Max. =9.0-19.0 Mean ± SD=16.52±2.01.

Table (5): Elicits distribution analysis of total percentage of Factors Associated with medications adherence among studied patients undergoing cataract surgery. The results revealed that, 100% of studied patients have low **<60%** adherence to post- operative medications related to educational, social and economic dimensions and health care system dimensions. Also the majority of studied patients have low adherence to post- operative medications related to therapy related dimensions and physical factors as 93% and84% respectively. But 38% of studied patients have moderate 60%-< 75% adherence to post- operative medications related to psychological and behavioral factors. While as more than half have (65%) of studied patients have high ≥75% adherence to post -operative medications related to condition related dimensions.

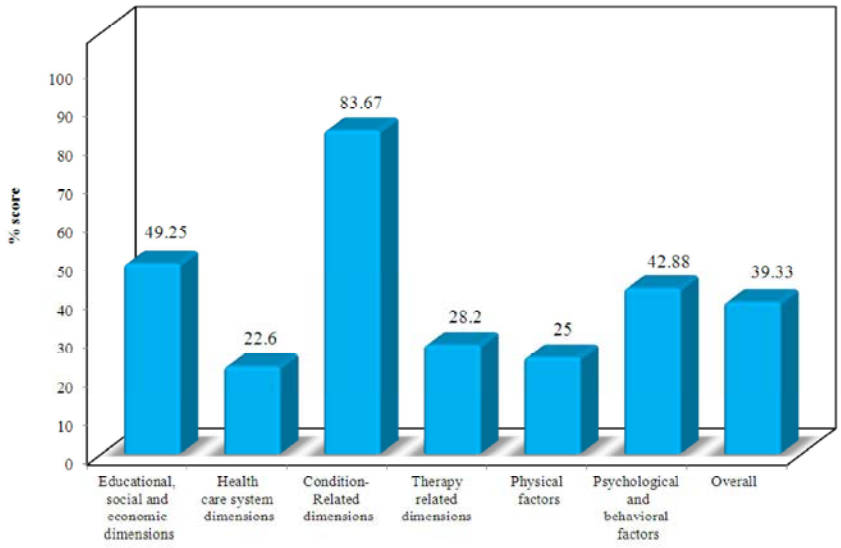


Fig. 1: Total percent score of factors dimensions associated with medication adherence among postoperative studied patients undergoing cataract Surgery (n = 100)

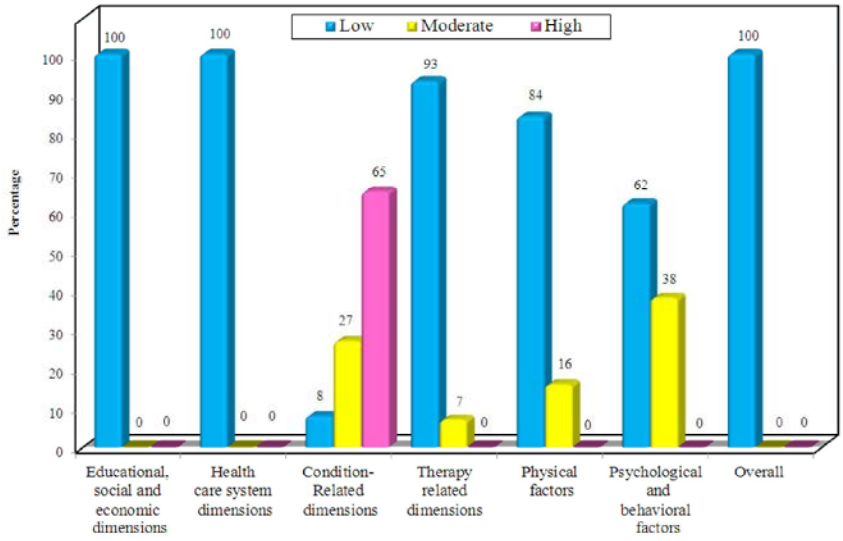


Fig. 2: Distribution analysis of total percentage of factors dimensions associated with medications adherence among postoperative studied Patients undergoing cataract Surgery in group (n = 100)

Table 5: Distribution analysis of total percentage of factors associated with medications adherence among postoperative studied patients undergoing cataract Surgery group (n = 100)

| | Low <60% | | Moderate 60%-<75% | | High ≥75% | |
|---|---|---|---|---|---|---|
| Variable | No. | % | No. | % | No. | % |
| Educational, social and economic dimensions | 100 | 100.0 | 0 | 0.0 | 0 | 0.0 |
| Health care system dimensions | 100 | 100.0 | 0 | 0.0 | 0 | 0.0 |
| Condition-Related dimensions | 8 | 8.0 | 27 | 27.0 | 65 | 65.0 |
| Therapy related dimensions | 93 | 93.0 | 7 | 7.0 | 0 | 0.0 |
| Physical factors | 84 | 84.0 | 16 | 16.0 | 0 | 0.0 |
| Psychological and behavioral factors | 62 | 62.0 | 38 | 38.0 | 0 | 0.0 |
| Overall adherence to all factors dimensions | 100 | 100.0 | 0 | 0.0 | 0 | 0.0 |

Table 6: Association between total scores of factors dimensions associated with medications adherence and total scores of socio demographic characteristics among postoperative studied patients undergoing cataract surgery

| Variable | Educational, social and economic dimensions Mean ± SD. | Health care system dimensions Mean ± SD. | Condition-Related dimensions Mean ± SD. | Therapy related dimensions Mean ± SD. | Physical factors Mean ± SD. | Psychological and behavioral factors Mean ± SD. | Overall adherence Mean ± SD. |
|---|---|---|---|---|---|---|---|
| Age | | | | | | | |
| 40 <50 | 57.69± 2.26 | 25.38 ± 8.59 | 69.23 ± 43.13 | 16.92 ± 7.36 | 0.0 ± 0.0 | 62.50 ±0.0 | 41.39 ± 1.79 |
| 50 <60 | 46.28 ± 7.82 | 21.62 ± 9.51 | 88.74 ± 15.87 | 32.16 ± 13.17 | 33.78 ± 27.58 | 35.98 ± 14.91 | 38.61 ± 5.28 |
| t(p) | 11.276*(<0.001*) | 1.777* (0.079)* | 2.254* (0.032)* | 7.244* (<0.001*) | 10.536* (<0.001*) | 15.298* (<0.001*) | 3.935* (<0.001*) |
| Sex | | | | | | | |
| Male | 55.43 ± 4.01 | 26.96 ± 7.56 | 82.61 ± 35.65 | 19.13 ± 7.25 | 9.78 ± 16.23 | 57.61 ± 11.63 | 42.34 ± 2.24 |
| Female | 43.98 ± 7.66 | 18.89 ± 9.25 | 84.57 ± 16.78 | 35.93 ± 13.11 | 37.96 ± 29.44 | 30.32 ± 9.89 | 36.77 ± 4.89 |
| t(p) | 9.551 *(<0.001*) | 4.722 *(<0.001*) | 0.342(0.734) | 8.077 *(<0.001*) | 6.040 *(<0.001*) | 12.678 *(<0.001*) | 7.497 *(<0.001*) |
| Marital status | | | | | | | |
| Single | 58.33 ± 0.0 | 40.0 ± 0.0 | 0.0 ± 0.0 | 20.0 ± 0.0 | 0.0 ± 0.0 | 62.50 ± 0.0 | 40.48 ± 0.0 |
| Married | 50.0 ± 8.24 | 21.24 ± 8.90 | 83.90 ± 25.18 | 27.19 ± 13.90 | 26.97 ± 28.76 | 44.24 ± 16.54 | 39.57 ± 4.97 |
| Widow | 39.81 ± 3.67 | 32.22 ± 4.41 | 100.0 ± 0.0 | 40.0 ± 0.0 | 11.11 ± 13.18 | 25.0 ± 15.31 | 36.77 ± 1.73 |
| F(p) | 8.107*(0.001*) | 10.929 *(<0.001*) | 14.258 *(<0.001*) | 4.218 *(0.018*) | 2.178 (0.119) | 7.123 *(0.001*) | 1.469 (0.235) |
| Education | | | | | | | |
| Illiterate | 50.96 ± 7.56 | 21.95 ± 9.13 | 82.38 ± 28.23 | 27.13 ± 13.97 | 27.59 ± 28.79 | 45.69 ± 16.16 | 40.23 ± 3.89 |
| Read & write | 37.50 ± 4.81 | 20.0 ± 11.55 | 91.67 ± 16.67 | 30.0 ± 11.55 | 0.0 ± 0.0 | 31.25 ± 12.50 | 31.55 ± 7.87 |
| Basic Education | 37.50 ± 4.81 | 25.00 ± 10.0 | 83.33 ± 19.25 | 35.0 ± 10.0 | 6.25 ± 12.50 | 18.75 ± 7.22 | 30.95 ± 6.73 |
| Secondary Education | 38.33 ± 4.56 | 34.0 ± 5.48 | 100.0 ± 0.0 | 40.0 ± 0.0 | 15.0 ± 13.69 | 22.50 ± 16.30 | 36.67 ± 1.30 |
| F(p) | 12.160 *(<0.001*) | 2.949 *(0.037*) | 0.788 (0.504) | 1.820 (0.149) | 2.201 (0.093) * | 7.470 *(<0.001*) | 12.326 *(<0.001*) |
| Occupation | | | | | | | |
| professional | 45.83 ± 4.81 | 20.0 ± 0.0 | 83.33 ± 19.25 | 20.0 ± 0.0 | 75.0 ± 0.0 | 25.0 ± 0.0 | 38.10 ± 2.75 |
| House wife | 41.86 ± 6.09 | 17.27 ± 9.24 | 82.58 ± 16.84 | 39.55 ± 11.80 | 32.95 ± 29.91 | 31.53 ± 10.61 | 35.82 ± 4.76 |
| Clarke Work | 55.77 ± 3.88 | 27.31 ± 7.17 | 84.62 ± 33.96 | 19.23 ± 6.82 | 14.42 ± 20.02 | 53.85 ± 15.17 | 42.40 ± 2.11 |
| F(p) | 92.887* (<0.001*) | 18.706* (<0.001*) | 0.067 (0.935) | 58.686* (<0.001*) | 15.317* (<0.001*) | 38.623* (<0.001*) | 41.087 *(<0.001*) |
| Financial State | | | | | | | |
| Not Enough | 50.19 ± 10.20 | 24.19 ± 9.06 | 75.19 ± 35.70 | 21.40 ± 10.14 | 16.28 ± 28.29 | 45.06 ± 18.93 | 38.15 ± 5.39 |
| Enough | 49.15 ± 7.83 | 25.13 ± 8.85 | 94.02 ± 12.96 | 31.28 ± 15.76 | 19.23 ± 17.64 | 44.23 ± 18.33 | 40.72 ± 4.56 |
| More than enough | 47.22 ± 4.04 | 13.33 ± 4.85 | 81.48 ± 17.04 | 37.78 ± 6.47 | 58.33 ± 21.0 | 34.72 ± 5.35 | 39.15 ± 2.61 |
| F(p) | 0.783 (0.460) | 13.532 *(<0.001*) | 5.497 *(0.005*) | 13.456 *(<0.001*) | 22.511 *(<0.001*) | 2.525 (0.085) * | 3.097 *(0.050*) |
| Residence | | | | | | | |
| Urban | 55.56 ± 3.97 | 27.04 ± 7.17 | 85.19 ± 33.44 | 19.26 ± 6.69 | 16.67 ± 22.78 | 52.78 ± 15.86 | 42.33 ± 2.10 |
| Rural | 41.85 ± 5.95 | 17.39 ± 9.05 | 81.88 ± 16.79 | 38.70 ± 12.22 | 34.78 ± 30.50 | 31.25 ± 10.46 | 35.82 ± 4.65 |
| t(p) | 13.723 *(<0.001*) | 5.943 *(<0.001*) | 0.637 (0.526) | 9.628 *(<0.001*) | 3.317* (0.001*) | 8.116 *(<0.001*) | 8.757 *(<0.001*) |

t: Student t-test F: F for ANOVA test *: Statistically significant at $p \leq 0.05$

Table 6: Association between total scores of factors dimensions associated with medications Adherence and total scores of socio demographic characteristics among studied patients undergoing cataract surgery

| Variable | Educational, social and economic dimensions Mean ± SD. | Health care system dimensions Mean ± SD. | Condition-Related dimensions Mean ± SD. | Therapy related dimensions Mean ± SD. | Physical factors Mean ± SD. | Psychological and behavioral factors Mean ± SD. | Overall adherence Mean ± SD. |
|---|---|---|---|---|---|---|---|
| Caregiver for patients at home | | | | | | | |
| No one (myself) | 52.29±9.73 | 23.73±9.37 | 78.43±33.88 | 21.57±11.89 | 18.14±26.02 | 46.08±18.62 | 39.26±5.70 |
| One of the family members | 46.09±5.41 | 21.43±9.35 | 89.12±15.79 | 35.10±11.92 | 32.14±28.41 | 39.54±15.38 | 39.41±3.64 |
| t(p) | 3.958*(<0.001*) | 1.226 (0.223) | 2.034*(0.046*) | 5.681*(<0.001*) | 2.572*(0.012*) | 1.917 (0.058) * | 0.151 (0.881) |
| The caregiver 's level of education | | | | | | | |
| Illiterate | 54.17±5.74 | 22.0 ±12.81 | 46.67±34.88 | 24.0 ±12.31 | 30.0 ±37.70 | 50.0 ±16.22 | 39.29±2.25 |
| Read & write | 47.88±9.38 | 22.0 ±8.03 | 92.12±14.29 | 29.82±13.81 | 28.18±27.24 | 37.05± 17.0 | 38.79±4.80 |
| Basic Education | 48.02±7.41 | 22.38±8.31 | 93.65±13.41 | 29.52±14.99 | 9.52±12.44 | 53.57±12.59 | 40.36±6.37 |
| Secondary Education | 50.0 ± 0.0 | 35.0 ±5.77 | 100.0 ± 0.0 | 20.0 ± 0.0 | 37.50±14.43 | 31.25±7.22 | 41.67±4.12 |
| F(p) | 3.069*(0.032*) | 2.546 (0.060) * | 29.229*(<0.001*) | 1.453 (0.232) | 3.034*(0.033*) | 7.790*(<0.001*) | 0.879 (0.455) |

t: Student t-test F: F for ANOVA test *: Statistically significant at $p \leq 0.05$

Finally, the results illustrated that 100% of studied patients who undergoing cataract Surgery have low < 60% adherence related to over all Factors dimensions associated with Medications

Table (6): Illustrates association between total scores of factors dimensions associated with medications Adherence and total scores of socio demographic characteristics among postoperative studied patients

undergoing cataract surgery. The results revealed that there is a significant association between total score of age of studied patients and total scores of all factors dimensions associated with medications adherence as educational, social and economic dimensions, health care system dimensions, Condition-Related dimensions. Therapy related dimensions. Physical factors, Psychological and behavioral factors and overall Adherence t=11.276*(<0.001*), t=1.777* (0.079),t= 2.254* (0.032),t= 7.244* (<0.001*), t=10.536* (<0.001*), t=15.298* (<0.001*) and t=,3.935* (<0.001*) respectively.

Also, there is a significant association between total scores of factors dimensions associated with medications adherence among studied patients and total scores of their sex related to educational, social and economic dimensions, health care system dimensions, Condition-Related dimensions. Therapy related dimensions. Physical factors, Psychological and behavioral factors as t=9.551* (<0.001*), t=4.722* (<0.001*), t=0.342 (0.734), t= 8.077* (<0.001*), t=6.040 *(<0.001*), t=12.678* (<0.001*), respectively.

As regards, marital status, the results revealed that there are a significant association between total scores of factors dimensions associated with medications Adherence among studied patients and total scores of their marital status related to educational, social and economic dimensions, health care system dimensions, Condition-Related dimensions. Therapy related dimensions. and Psychological and behavioral factors as F=8.107*(0.001*), F=10.929*(<0.001*), F=14.258*(<0.001*) and F=4.218 *(0.018*) respectively, While as there is no association between the marital status and total scores of overall adherence among studied patients related to all of factors dimensions associated with medications.

In relation to educational level, the results showed that, there are no association between total scores of factors dimensions associated with medications Adherence among studied patients and total scores of their educational level related to health care system dimensions, Condition-Related dimensions and Therapy related dimensions. As F=0.788 (0.504), F=1.820 (0.149) respectively.

Furthermore, there were no association between adherence of studied patients total scores of Condition-Related dimensions and total scores of their occupation while as there were significant association between studied patients occupations and their adherence related to total scores of educational, social and economic dimensions, health care system dimensions. Therapy related dimensions, physical factors and Psychological and behavioral factors as F=92.887* (<0.001*), F=18.706* (<0.001*), F=58.686* (<0.001*), F=15.317* (<0.001*) and F=38.623* (<0.001*) respectively

Also, there were no association between total scores of financial status of studied patients and their adherence related to total scores of educational, social and economic dimensions. And, there were no association between total scores of residence of studied patients and their adherence related to total scores of Condition-Related dimensions.

On the other hand, related to Caregiver for patients at home, the results illustrated that, there were significant association between total score of care giver at home and adherence of studied patients related to total score of educational, social and economic dimensions, Therapy related dimensions, Condition-Related dimensions and patients dimension related to physical factors and Psychological and behavioral factors as t=3.958* (<0.001*), t=2.034* (0.046*), t=5.681* (<0.001*), t=2.572* (0.012*) and t=1.917 (0.058) * respectively.

Moreover, there were a significant association between the total score of level education of care giver for studied patients and total score of educational, social and economic dimensions, health care system dimensions, therapy related dimensions and patients dimension related to physical factors and Psychological and behavioral factors as, F=3.069* (0.032*), F=2.546 (0.060)*, F=29.229* (<0.001*), F=3.034* (0.033*) and F=7.790* (<0.001*) respectively.

Finally, the results revealed that there were significant association between total score of the age, sex, educational level, occupation, financial and residence status of studied patients and their adherence for total scores of all factors dimensions associated with medications t=3.935* (<0.001*), t=7.497 * (<0.001*), F=12.326*(<0.001*), F=41.087*(<0.001*), F=3.097*(0.050*) and t=8.757* (<0.001*) respectively.

Table (7): shows association between total scores of factors dimensions associated with medications Adherence and total scores of clinical data among studied patients undergoing cataract surgery it showed that there were significant association between the total score of clinical data among studied patents related to their diagnosis and ocular history and their total scores adherence related to educational, social and economic dimensions, health care system dimensions, Condition-Related dimensions. Therapy related dimensions. Physical factors, Psychological and behavioral factors at $p \leq 0.05$.

Table 7: Association between total scores of factors dimensions associated with medications adherence and total scores of clinical data among studied patients undergoing cataract surgery

| Variable | Educational, social and economic dimensions Mean ± SD. | Health care system dimensions Mean ± SD. | Condition-Related dimensions Mean ± SD. | Therapy related dimensions Mean ± SD. | Physical factors Mean ± SD. | Psychological and behavioral factors Mean ± SD. | Overall adherence Mean ± SD. |
|---|---|---|---|---|---|---|---|
| Diagnosis | | | | | | | |
| Traumatic cataract | 58.33± 0.0 | 35.0 ±9.26 | 8.33±15.43 | 20.0 ± 0.0 | 0.0 ± 0.0 | 62.50± 0.0 | 39.88±1.10 |
| Senile cataract | 49.04±8.18 | 20.80±8.24 | 89.66±15.51 | 28.28±14.16 | 28.45±28.32 | 41.67±17.01 | 39.38±5.08 |
| Complicated cataract | 38.33±4.56 | 34.0±5.48 | 100.0 ± 0.0 | 40.0 ± 0.0 | 5.0 ±11.18 | 32.50±16.77 | 37.62±1.99 |
| F(p) | 10.467*(<0.001*) | 15.963*(<0.001*) | 108.155*(<0.001*) | 3.473*(0.035*) | 5.610*(0.005*) | 6.983*(0.001*) | 0.374 (0.689) |
| Ocular history | | | | | | | |
| None | 36.57 ± 4.18 | 22.22 ± 11.66 | 87.04 ± 16.72 | 38.89±12.78 | 12.50±12.86 | 25.0 ±11.34 | 32.54±5.23 |
| Eye trauma | 58.33 ± 0.0 | 40.0 ± 0.0 | 0.0 ± 0.0 | 20.0 ± 0.0 | 0.0 ± 0.0 | 62.50± 0.0 | 40.48± 0.0 |
| Inflammation | 58.33 ± 0.0 | 40.0 ± 0.0 | 0.0 ± 0.0 | 20.0 ± 0.0 | 0.0 ± 0.0 | 62.50± 0.0 | 40.48± 0.0 |
| Amblyopia | 53.33 ± 5.57 | 23.0 ± 7.43 | 90.0 ± 17.68 | 21.33±8.92 | 30.0 ±30.81 | 47.08±17.43 | 41.51±3.08 |
| Glucoma | 50.0 ± 0.0 | 10.0 ± 0.0 | 83.33 ± 19.25 | 40.0 ± 0.0 | 62.50±14.43 | 37.50± 0.0 | 40.48± 0.0 |
| Optic nerve or retinal disease | 43.06 ± 3.24 | 16.67 ± 4.92 | 88.89 ± 16.41 | 46.67±9.85 | 18.75±18.84 | 40.63±5.65 | 37.70±2.65 |
| F(p) | 40.597* (<0.001*) | 9.295* (<0.001*) | 30.980*(<0.001*) | 21.884* (<0.001*) | 4.201* (0.002*) | 8.544* (<0.001*) | 19.783* (<0.001*) |
| Associated disease | | | | | | | |
| None | 38.19±4.29 | 28.33±9.37 | 91.67±15.08 | 36.67±7.78 | 8.33±12.31 | 23.96±13.55 | 33.93±5.75 |
| Diabetes Mellitus | 56.14±3.72 | 25.79±7.58 | 78.95±38.30 | 18.95±7.98 | 3.95±9.24 | 62.50 ± 0.0 | 42.36±2.16 |
| Hypertension | 47.52±6.93 | 19.36±9.19 | 85.11±16.75 | 33.62±14.51 | 46.81±25.33 | 32.98 ± 8.42 | 39.01±3.67 |
| Ischemic heart disease | 33.33± 0.0 | 10.0 ± 0.0 | 88.89±19.25 | 26.67±11.55 | 16.67±14.43 | 25.0 ±0.0 | 27.78±1.37 |
| F(p) | 45.647*(<0.001*) | 8.031*(<0.001*) | 0.815 (0.489) | 13.562*(<0.001*) | 39.341*(<0.001*) | 148.537*(<0.001*) | 30.478*(<0.001*) |
| Prescribed medications | | | | | | | |
| None | 38.19±4.29 | 28.33±9.37 | 91.67±15.08 | 36.67±7.78 | 8.33±12.31 | 23.96±13.55 | 33.93±5.75 |
| Hypoglycemic | 56.14±3.72 | 25.79±7.58 | 78.95±38.30 | 18.95±7.98 | 3.95±9.24 | 62.50 ± 0.0 | 42.36±2.16 |
| Antihypertensive | 47.52±6.93 | 19.36±9.19 | 85.11±16.75 | 33.62±14.51 | 46.81±25.33 | 32.98 ± 8.42 | 39.01±3.67 |
| Cardiac agent | 33.33± 0.0 | 10.0 ± 0.0 | 88.89±19.25 | 26.67±11.55 | 16.67±14.43 | 25.0 ±0.0 | 27.78±1.37 |
| F(p) | 45.647*(<0.001*) | 8.031*(<0.001*) | 0.815 (0.489) | 13.562*(<0.001*) | 39.341*(<0.001*) | 148.537*(<0.001*) | 30.478*(<0.001*) |

F: F for ANOVA test *: Statistically significant at $p \leq 0.05$

While there were no significant association between the total score of associated disease and prescribed medications among studied patents and their total scores adherence related to Condition-Related dimensions.

On the other hand, the results revealed that there were significant association between the total scores of ocular history, associated disease and prescribed medications of studied patients and their overall adherence to all factors dimensions associated with medications as F=

19.783* (<0.001*), F=30.478* (<0.001*), F=30.478* (<0.001*), respectively While as, No significant association between total scores of diagnosis of studied patients and their overall adherence to all factors dimensions associated with medications as F=0.374 (0.689).

## DISCUSSION

Cataract surgery is brief safe procedure but, the real healing doesn't even begin until the operation is conclude, but there is much needs to be done before clear, long-term vision can develop. That entire recovery outcome occurs away from the hospital, the surgeon, nurses and patients should manage the progress of healing. Besides the therapeutic regimen should be follow after operation as avoiding strenuous activity the proper administration of the prescribed medications is the most important thing patients can do to relieve post-operative discomfort and to prevent complications after surgery. non - adherence to prescribed medications severely compromises patients recovery outcomes and increase their complications. To improve medication adherence there are a several factors affect on the patients adherence to prescribed medications after cataract surgery [24, 25].

Therefore this study aim to identify factors associated with medications adherence among postoperative cataract patients undergoing cataract surgery

Regarding demographic characteristics of studied patients, the result of the present study revealed that, more than half of studied patients were in the age group from 50 <60 years old this results are in the same line with the finding by Lixia [26] who stated that The rate of cataract per thousand persons aged 60 years old or older has doubled in the last 20 years.

Moreover, the results showed that more than half of studied patient were female, this results are in the same line with the finding by Zetterberg [27] who illustrated that cataract is highly incidence in female than male due to decrease in estrogen for females at menopause. Also, Gopal [28] stated that, The prevalence of cataract is higher in females than males ratio of 1 to approximately 3.1. and females have a higher prevalence of lens opacities, especially cortical

In relation to the clinical data of studied patients the results illustrated that, the majority of studied patients have diagnosed senile cataract this results are the same line with Zhuang [27] who stated that the most common

type of cataract occurs was senile cataract. Although age group of the studied patients from50 <60 years old, so they have a senile cataract.

Moreover the results showed that more than half of studied patients had history of amblyopia this results were in the same line with who stated that The most common patients of cataract had history of previous ocular disease, as amblyopia while as, Adnan [29] results contradicting this findings which reports that the chief complaint of the cataract patients, were decrease of vision.

Concerning associated disease with cataract, the results illustrated that, less than half (44%) of studied patients with cataract had hypertension and administrate hypertensive drugs while as38% of them had diabetes mellitus and administrate hypoglycemic drugs. this results is agreed with Suzanne [30] results who founded that hypertensive patients who using anti-hypertensive drugs had a highly incidence of cataract and perform cataract surgery than normotensive patients. While as this results of present study were contradicted by, Gopal [28]. who stated that the patients with diabetes are highly risk for developing three types of cataract formation than any individual cardiovascular risk factor alone.

On the other hand the results of this study illustrated that the majority of patients percent score had adhere to postoperative medications related to the factor of condition related dimensions. This findings means that the patients may had somewhat thoughts about the medications would cure their conditions and relive their symptoms. Although less than half of studied patients percent score had adhere to post-operative medications related to all factors dimensions this finding were supported by Gopal and Chan [28, 31] who stated that less than half of cataract patients, medication adherence was drastically low. Related to poor adherence of many factors dimensions associated with the medication adherence such as the presence of other diseases, awareness, knowledge, perception and attitude related factors dimensions. Which showed a serious failure to their recovery outcome.

In relation to effect of factors dimensions' on adherence to post-operative medications. The results of present study illustrated that, all studied patients have low adherence to post-operative medications related to educational, social and economic dimensions and health care system dimensions. this finding were supported with. Zhuang and Raynor [27, 32] who explained that, the cataract patients had poor adherence to prescribed medications related to Specific factors identified as barriers as educational, social and economic status which due to lack of understanding of their disease, city patients with low socioeconomic status were high medication costs. Also, lack of transportation, poor awareness and understanding of medication instructions and long wait times at the pharmacy, furthermore a lack of family and social support is also predictive of noncompliance with medications. In addition, Ashley and Reach [25, 33] emphasized that poor adherence of prescribed medications related to health care system as a results of poor in building good therapeutic relationship among the patients, physician and nurses. Poor communication with patients concerning the benefits, instructions of use and side effects of drugs and lack of involvement in the treatment decision-making process.

Concern to therapy related dimensions and physical factors the results revealed that the majority of studied patients have low adherence to post-operative medications this findings indicated that the most patients had a physical impairment as hearing loss, vision impairment and difficult in movements which hinder their ability to adhere to post- operative medications Also, this results similar to Antonia and Sarah [34, 35] who reported that patients with cataract surgery had low adherence related to therapy related dimensions' due to the complexity of the medications which includes the increase number of drugs, routes of administrations, number of daily doses required; and side effects of drugs. Moreover medications administration were inconvenient and interfere with a patient lifestyle which have been associated with less adherence,

Regarding psychological and behavioral factors. The present results of this study declared that less than half of studied patients had moderate adherence to post- operative medications. Similarly, Hegazy and Gopal [28, 36] reported that more than half of the patients with cataract surgery had high level of anxiety. This result may be due to lack of psychological preparation before surgery and fear from post- operative complications. Also The previous findings confirmed by Ashley and Eaton *et al* [37, 25] who illustrated that majority of the nurses perform psychological preparation incorrectly. They also investigated that, anxiety results when patients are unable fully to understand process of surgery and fear from their vision were not return to normal. So they stressed on the value of the preoperative preparation for patients psychologically in reduce level of their anxiety which affect on postoperative adherence to follow prescribed regimen.

In Addition Zhuang *et al*. [27] emphasized that, patients with cataract surgery had cognitive limitations which may increase their risk for non adherence to follow their medications due to poor of awareness of administration of medications, knowledge about the disease, the reasons medication is needed, lack of motivation and low self -efficacy.

Furthermore, the results of the present study revealed that more than half have of studied patients have high adherence to post operative medications related to condition related dimensions. This findings were contrast with Chan and Antonia [31, 34] who stressed that, with Long term administration of medications for many chronic illnesses and adherence to such treatment regimens often declines significantly over long time. This often happens when patients have few or no symptoms related to their disease, awareness their disease and what will happen if it is not treated.

On the other hand, the present study revealed that, there was statically significant positive association between total scores of factors dimensions associated with medications Adherence and total scores of socio demographic characteristics related to age, sex, educational level, occupation, financial and residence status of studied patients and their overall adherence for all factors dimensions associated with medications this finding was at the same line with Lixia and Marie [26, 38] who emphasized that there were strong correlation between sociodemographic characteristics and factors dimensions on the patients adherence of medications regarding educational level, financial income, occupation and their residence. While as the results of the present study was contradicting with Chan and Madeleine [31, 39] studies which stated that demographic characteristics were not found a significant affecting on the adherence of medications even though there was a slight variation in the adherence pattern with different educational level status, occupation and marital status. Similar kind of finding was stated in the field of epilepsy drug compliance research who they could not find much significant correlation between the demographic characteristics and different measures of compliance to follow the prescribed medications.

Concerning Caregiver for patients at home, the results of the present study illustrated that, there were significant association between total score of care giver at home and adherence of studied patients related to total score of educational, social and economic dimensions, Therapy related dimensions, Condition-Related dimensions, physical and Psychological and behavioral factors this findings supported by Suzanne [30] who showed that older age, not living with family, were significantly associated with adherence to medication. These findings are consistent with Ashley and Andrea [40, 25] that found that caregivers play an important role in administration of medication adherence. This role may be increasingly important as cognition declines. Similarly Liana [41] emphasized that there were a significant correlation between The presence of family support or caregiver at home and improving medication compliance in patients with cataract surgery who helping them to take their medications and follow the physician instructions.

Finally, the results of the present study declared that there were significant positive association between the total scores of clinical data related to ocular history, associated disease and prescribed medications and adherence of studied patients to all factors dimensions associated with postoperative medications this finding as a result of the patients with cataract had another chronic disease as diabetes or hypertensions and take another prescribed medications so it may be interference with their adherence to post- operative cataract medications this results in the same line with Miyazaki [42] findings who emphasized the clinical data of patients as treating from another disease or complains from pervious symptoms were influences with medication adherence in patients with chronic disease.

## CONCLUSIONS

Based on the findings of the current study, it can be concluded that the majority of the studied patients with cataract surgery were poorly adherent to their medications. Related to several factors dimensions as low educational, social and economic status, poor communications with health care system dimensions, Condition and therapy related dimensions, as well as physical, psychological and behavioral factors.

**Recommendations:**

- Nursing efforts are needed to provide health education about cataract and its treatment regimens for patients with cataract surgery that would improve their medication adherence and believes effectively.
- Medication related issues including therapeutic action, dose and precautions should be discussed by nurses with patients with cataract in order to increase their awareness and adherence.

- Nurses should be advocates to encourage health institutions in providing patients with cataract low cost and effective medications to relieve economic burden on them.
- periodically scheduled follow up with health care providers (e.g. telephone intervention or telehealth).

## REFERENCES


1. Blindness and vision impairment. WHO, 2019. available at https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment
2. Thomas, A., J. Thomas and M. Grand, 2000. Lens and Cataract. United States of America: American Academy of ophthalmology, pp: 64.
3. Hughes, M., 2004. A pictorial anatomy of the human eye/an ophthalmic socket: a review for ocularists. Journal of Ophthalmic Prosthetic, Washington: Virginia Company, 67(2): 55.
4. Saunders, M., 2003. Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing and Allied Health, 7th ed Available, at: http:// www.medicallook.com/ human-anatomy/organs/lacrimal-apparatus.html. retrieved at 29/3/2011
5. Walsh, M., 2002. Watson's Clinical Nursing and related science. 6th ed. Philadelphia: Bailliere Tinddall Company, pp: 771.
6. Thomas, A., J. Thomas and M. Grand, 2000. Lens and Cataract. United States of America: American Academy of Ophthalmology, pp: 64.
7. Kanski, J., 2007. Clinical ophthalmology a systemic approach. 6th ed. Philadelphia: Elsevier Company, pp: 361.
8. Oscar, J., F. Deborah and V. évesque, 2014. Evaluation of eyedrop administration by inexperienced patients after Cataract Surgery. Journal of Cataract and Refractive Surgery, 40(11): 1875-61.
9. Morrison, A., M. Stauffer and S. Anna, 2015. Defining medication adherence in individual patients. Patients Preference and Adherence, 9: 893-7.
10. Jimmy, B. and J. Jose, 2011. Patients Medication Adherence: Measures in Daily Practice. Oman Medical Journal, 26(3): 155-59.
11. Zhang, N., A.M.A. Terry and C. Horney, 2014. Impact of Health Literacy on Medication Adherence: A Systematic Review and Meta-analysis. Annals of Pharmacology, 48(6): 741-751.
12. Kardas, P., P. Lewek and M. Matyjaszczyk, 2013. Determinants of patient's adherence: a review of systematic reviews. Frontiers in Pharmacology. Annals of Pharmacotherapy, 4: 91.
13. Bakry, H., E. Waly and M. Hammad, 2017. Adherence to Treatment of Rheumatoid Arthritis Patients at Zagazig University Hospitals. The Egyptian Journal of Community Medicine, 35(4): 25-33.
14. Astbury, N., 2016. Improving cataract outcomes through good postoperative care. Community Eye Health Journal, 29(94): 21-53.
15. Taha, N. and N. AbdElaziz, 2015. Effect of Nursing Intervention Guidelines on Nurses' Role, Patients' Needs and Visual Problems Post Cataract Surgery. American Journal of Nursing Science, 4(5): 261-269.
16. Sanja Masnec and Miro Kalauz, 2016. Advances in Eye Surgery. available at: http:// www.intechopen.com/ books/advances-in-eye-surgery
17. Dennis Lam, Srinivas K. Rao, Vineet Ratra, Yizhi Liu1 and Paul Mitchell. Catarct, 2015. Macmillan Publishers Limited. Available at: :https:// www.researchgate.net/ publication/282533355
18. Elsayed, H., 2012. The Effect Of An Individualized Teaching On Postoperative Outcome For Patients Undergoing Cataract Surgery Unpublished Master Dissertation. Faculty of Nursing. University of Alexandria.
19. Al-Aqeel, S. and J. Al-Sabhan, 2011. Strategies for improving adherence to antiepileptic drug treatment in patients with epilepsy. The Cochrane Database of Systematic Reviews, 19(1): CD00831.
20. Buelow, J., W. Miller and J. Fishman, 2018. Development of an Epilepsy Nursing Communication Tool: Improving the Quality of Interactions between Nurses and Patients with Seizures. The Journal of Neuroscience Nursing, 50(2): 74-80.
21. Behnood, A., O. Rabbanifar, P. Pourzargar, A. Rai, Z. Saadat, H. Saadat and D.E. Morisky, 2016. Adherence to Antihypertensive Medications in Iranian Patientss. International Journal of Hypertension, pp: 1508752.
22. World Health Organization, 2003. Adherence to long-term therapies: evidence for action. Geneva, Switzerland: WHO available at: http:// www.WHO.com. Retrieved on: 14/7/2019.
23. Keenan A. Pituch and James P. Steven, 2016. Applied Multivariate Statistics for the Social Sciences: Analyses with SAS. IBMs-SPSS. Newyork. 6thed

24. Rees, G., O. Leong and J.G. Crowston, 2010. Intentional and non -intentional non-adherence to ocular hypotensive treatment in patientss with glaucoma. Ophthalmology, 117: 903-8.
25. Ashley, S., C. Maryse, R. Ranjana, O. Mine and D. Daniel, 2018. Factors associated with medication adherence in older patients: A systematic review. Journal of Aging Medicine, pp: 254-266.
26. Lixia Lou, M.D., M.D. Xin Ye and M.D. Peifang Xu, 2018. Jingyi Wang, MS[1].Association of Sex With the Global Burden of Cataract. JAMA Ophthalmology, 136(2): 116-121
27. Zhuang, M., W. Fan, P. Xie, S.T. Yuan, Q.H. Liu and C. Zhao, 2019. Evaluation of the safety and quality of day-case cataract surgery based on 4151 cases. International Journal of Ophthalmology, 12(2): 291-295.
28. Gopal, K., B. Krutika and C. Pragti, 2019. Cataract and its risk factors: A case control study. Journal of Family Medicine and Primary Carel, (8): 2120-2123. Adnan A. NizamiC. ;Cataract. http:// creativecommons.org/ licenses/by/4.0/: 2/12/ 2019
29. Suzanne, H., W. Janita and M.B. Jean, 2016. Adherence to Antihypertensive Medication in Older Adults With Hypertension. The Journal of Cardiovascular Nursing, (31): 296-30.
30. Chan, K. and P. Ki Ho, 2017. Treatment patterns and medication adherence of patients with glaucoma in South Korea. British Journal of Ophthalmology, 101(6): 801-807.
31. Raynor, D.K., 2008. Medication literacy is a 2-way street. Mayo Clin Proc., 83(5): 520-522.
32. Reach, G., 2010. Is there an impatience genotype leading to non-adherence to long-term therapies? Diabetologia, 53(8): 1562-1567.
33. Antonia, K., 2011. Factors affect in patients adherence to medication regimen. Health Science Journal, 3(5).
34. Sarah, M., L. Qasim, B. Osama and H. Muhammad, 2018. Association between medication adherence and quality of life of patients with diabetes and hypertension attending primary care clinics: across-sectional survey. Quality of Life Research, (1).
35. Hegazy, S., H. Sobeh, H. Mohamed and N. Ahmed, 2008. Day case cataract surgery : Improving patients self-care practices. The New Egyptian Journal of Medicine. Supplement, 38(6): 18-26.
36. Eaton, M., G.M. Gordon and A. Konowal, 2015. A novel eye drop application monitor to assess patients compliance with a prescribed regimen: a pilot study. Eye, 29: 1383-91.
37. Marie, T. Brown and K. Jennifer, 2011. Bussell,. Medication Adherence: WHO Cares? Mayo Clin Proc., 86(4): 304-314.
38. Madeleine, Z. and C. Dragana, 2015. Gender and Cataract-The Role of Estrogen Journal Current Eye Research, 40: 176-190.
39. Andrea, D., P. John and A. George, 2013. Caregiver status affects medication adherence among older home care clients with heart failure Aging Clinical and Experimental Research, (24): 718-721.
40. Liana, A., F. Marta and A. Maria, 2017. Medication adherence in patients with juvenile idiopathic arthritis. Rev. Bras. Reumatol., (57): 1.
41. Miyazaki, M., A. Nakashima and Y. Nakamura, 2018. Association between medication adherence and illness perceptions in atrial fibrillation patients treated with direct oral anticoagulants: An observational cross-sectional pilot study. Journal of PLoS One, 13(9): e0204814.