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# Study on Synergistic Effect of Eye Care and Drug Therapy in Patients with Dry Eye

**Hui Guo[1], Dandan Liu[2*]**

[1]Langfang Natural Resources Comprehensive Survey Center, China Geological Survey, Langfang 065000, Hebei, China
[2]Langfang City, Guangyang District Eye Hospital Operating Room, Langfang 065000, Hebei, China

**Author to whom correspondence should be addressed.*

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**Abstract:** *Objective:* The aim of this study was to evaluate the synergistic effect of eye care and drug therapy in patients with dry eye. *Methods:* A total of 59 patients with dry eye diagnosed and treated in our hospital were randomly divided into the reference group (29 cases) and the experimental group (30 cases). Patients in the reference group received only the usual medication, while the experimental group received additional eye care. The treatment response and the improvement of quality of life were evaluated by comparing the treatment excellence rate, quality of life score, and nursing satisfaction score of the two groups. *Results:* The rate of excellent treatment in the experimental group was 93.33%, which was significantly higher than that in the reference group (68.97%) ($P = 0.013$). The quality of life scores in social function, psychological function and physiological function of the experimental group were significantly higher than those of the reference group ($P < 0.003$), the nursing satisfaction score and symptom score were also improved more significantly ($P < 0.003$), and the SAS score was decreased more ($P < 0.003$). *Conclusion:* The synergistic effect of comprehensive eye care and drug therapy on patients with dry eye can significantly improve the rate of good treatment and quality of life score, increase the nursing satisfaction of patients, and have potential benefits to improve psychological status, providing an effective way for the management of dry eye.

**Keywords:** Dry eye; Eye care; Medication; Quality of life score; Excellent and good rate of treatment

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## 1. Introduction

People with dry eyes often suffer from a burning sensation around the pupils and discomfort in the eyes, and these symptoms are a pain they cannot ignore. This disease not only impairs visual function but also leads to a significant decrease in quality of life. With electronic screens becoming an integral part of daily life and the continuing effects of environmental pollution, dry eye is becoming a growing public health problem. Globally, the prevalence of dry eye is between 5% and 30%, and this figure increases as people age. Ocular surface damage

and visual impairment caused by dry eye disease have become a health threat that cannot be ignored, and it can also trigger a chain reaction of mental health issues, causing profound negative effects on the career and personal life of patients. At present, the treatment of dry eye mainly relies on drug therapy, such as artificial tears, anti-inflammatory drugs, etc., but single drug treatment is often difficult to meet the comprehensive needs of patients. In recent years, eye care, as an auxiliary treatment, has been widely used in the management of dry eye. By improving the eye environment, promoting tear secretion, and reducing eye pressure, eye care can effectively relieve patients' symptoms and improve treatment results. Studies have shown that drug therapy combined with eye care may have a synergistic effect that can significantly improve patients' symptoms and quality of life. However, current systematic studies on the synergistic effect of eye care and drug therapy in patients with dry eye are still limited. Therefore, this study aims to evaluate the synergistic effect of combining eye care and drug therapy for patients with dry eye through clinical trials, to provide new ideas and evidence support for the clinical treatment of dry eye.

## 2. Data and methods

### 2.1. General information

The study was conducted in our hospital from June to December 2022, and a total of 59 patients diagnosed with dry eye were selected for the study. Using a computer-generated randomization table, the 59 patients were evenly divided into two groups, with 29 in the control group and 30 in the test group. In the reference group, 12 men and 17 women ranged in age from 30 to 59 years, with an average age of about 44.07 years. In the trial group, 13 men and 17 women ranged in age from 28 to 60 years, with an average age of about 45.03 years. No significant statistical difference was found in gender, age, course of disease, and severity of dry eye between the two groups, indicating a good comparability between the two groups.

All patients in the control group received routine eye care instructions, including eye cleaning, use of tear substitutes, hot eye compresses, and use of anti-inflammatory and lubricating eye drops as prescribed by the doctor. Patients in the experimental group received the same eye care measures as the control group, but also added a specially designed care plan, including personalized eye massage, lifestyle adjustment guidance, and regular follow-up and feedback mechanisms.

During treatment, none of the patients received other drugs or treatments that could have affected the study results. This study has been approved by the ethics committee of the hospital and the informed consent signed by the patients, and the personal information of the patients is kept confidential. The collection and collation of the study data was undertaken by the members of the research team and evaluated in a double-blind manner to ensure the accuracy and objectivity of the data.

### 2.2. Methods

This is a prospective, randomized controlled clinical study to evaluate the synergistic effect of eye care and medication in patients with dry eye. The subjects were hospitalized patients diagnosed with dry eye syndrome. According to the patients' wishes and the principle of random allocation, the patients were divided into a reference group and an experimental group.

Patients in the control group received conventional dry eye treatment, including medication and regular eye care. In terms of medication, all patients were treated with artificial tear drops, and the dosage was individually

adjusted according to clinical needs. The care regimen includes regular eye cleansing, use of moisturizing creams and perieye massages aimed at improving blood circulation. All care measures are carried out by professional nursing staff and strictly follow standardized operating procedures.

In the experimental group, comprehensive eye care intervention was added on the basis of conventional treatment. The nurse first makes a comprehensive assessment of the patient's eye condition and then develops a personalized care plan, including eye hygiene instructions, eyelid cleaning, eye moisturizing, etc. In addition, the patient received regular eye massage and topical hot compress treatment to promote microcirculation in the eye and reduce dry eye symptoms. Caregivers also communicate with patients, pay attention to their care needs, and conduct psychological counseling to help patients adjust their emotions and reduce the impact of dry eye symptoms on daily life.

The intervention period for dry eye patients was 8 weeks. During the intervention period, patients in the control group and the experimental group received eye care once a week for about 30 minutes. The care process includes eye cleansing, moisturizing, hot compresses, and recommendations for personalized care tailored to the patient's symptoms. Patients in the test group also received regular eye massages and mood management instructions, which were flexibly adjusted according to the patient's specific symptoms.

## 2.3. Evaluation indicators and criteria

The evaluation of curative effect was mainly based on three criteria: excellent rate of treatment, quality of life score, and evaluation of intervention effect.

According to the improvement of patients' disease, the rate of excellent treatment was divided into three stages: "good", "acceptable", and "no significant improvement". Among them, "better" means that the disease is significantly improved; "Acceptable" means partial remission of the disease; "No significant improvement" means that the disease has not significantly reduced or even worsened. The treatment excellence rate is calculated by adding the number of patients who are "good" and "acceptable" and then dividing by the total number of people in the study.

The quality of life score was scored using a standardized scale covering three main dimensions: social ability, mental state, and physical function. The score for each dimension is assessed according to the corresponding item on the scale, and the higher the score, the higher the quality of life in that dimension. The three dimensions of the score are combined into an overall quality of life indicator.

The effect of the intervention was measured by comparing multiple scores before and after treatment. Among them, patients' satisfaction with nursing work is reflected on a scale through specific terms, and scored according to the 1100 score scale. The self-rating Anxiety Scale (SAS) score was used to assess the difference in the anxiety status of dry eye patients before and after treatment, and the increase in the score indicated an increase in the anxiety level. Symptom scores use a standard scale to track the extent to which a patient's symptoms are alleviated, with lower scores indicating remission.

Each score is assessed using a double-blind method and is conducted by a professionally competent assessment team. The evaluation team does not need to know the patient's group during the scoring process to ensure the fairness and accuracy of the assessment results. By comparing the key indicators of the reference group and the experimental group, the aim of this study was to investigate the effect of the synergistic effect of eye care and drug therapy on treatment outcomes and quality of daily life in patients with dry eye disease.

## 2.4. Statistical analysis

Once the data were accurate, a normal distribution test was performed. The measured quantized data are presented in terms of the mean and standard deviation ($\bar{x}\pm s$) after verification of normality. The independent sample t-test was used to control and analyze the treatment effect and the change between the treatment group and the control group. When calculating the frequency, such as comparing the response to a treatment, the Chi-square test enters the stage and is converted into a more intuitive percentage form.

In order to get absolutely reliable statistical results, SPSS22.0, a powerful statistical analysis software, was used. In the process of analysis, the *P*-value is like a compass to guide us to determine whether statistical significance is achieved. In general, when the *P*-value is less than 0.05, then it is believed that there is a statistical difference between the two groups; that is, the observed effect is not due to chance factors, but has a certain repeatability and universality.

# 3. Results

## 3.1. Comparison of good rates of treatment

In the study of eye care and drug therapy in patients with dry eye, the rate of good treatment in the experimental group was compared with that in the reference group. The results showed that the rate of excellent treatment in the experimental group was significantly higher than that in the reference group, the difference was statistically significant ($P = 0.013$), indicating that the synergistic treatment was more effective in improving the therapeutic effect. See **Table 1** for details.

**Table 1.** Treatment excellence rate (n/%) compared between the reference group and the experimental group after treatment

| Group | Optimal(n) | Good(n) | Poor(n) | Excellent and good rate of treatment |
|---|---|---|---|---|
| Reference group (29) | 8(27.59) | 12(41.38) | 9(31.03) | 20(68.97) |
| Experimental group (30) | 13(43.33) | 15(50.00) | 2(6.67) | 28(93.33) |
| $X^2$ value | - | - | - | 5.773 |
| *P* value | - | - | - | 0.013 |

## 3.2. Analysis of quality of life score

After treatment and intervention for dry eye, the quality of life scores of social function, psychological function and physiological function of experimental group were significantly higher than those of the reference group, indicating that the synergistic effect of eye care and drug therapy could effectively improve the overall quality of life of patients with dry eye disease, and the difference was statistically significant ($P < 0.003$). See **Table 2** for details.

**Table 2.** Quality of life scores of patients in the reference group and experimental group after intervention

| Group | Social function | Mental function | Physiological function | Quality of life score |
|---|---|---|---|---|
| Reference group (29) | 62.23 ± 3.23 | 61.15 ± 3.45 | 60.50 ± 3.69 | 61.50 ± 3.78 |
| Experimental group (30) | 68.5 ± 3.31 | 67.89 ± 4.10 | 68.52 ± 4.55 | 67.95 ± 4.20 |
| *T*-value | - | - | - | 4.573 |
| *P*-value | - | - | - | < 0.003 |

### 3.3. Evaluation of intervention effect

In terms of the evaluation of intervention effect, the nursing satisfaction score and SAS score of the experimental group were significantly improved, and the symptom score was reduced more than that of the reference group, and the difference between the two groups was statistically significant ($P < 0.003$ for all), indicating that the synergistic effect of eye care and drug therapy was more significant in the experimental group. See **Table 3** for details.

**Table 3.** Nursing satisfaction scores, SAS scores, and symptom scores of the two groups before and after intervention

| Group | Nursing satisfaction score | Symptom score | | SAS score | |
|---|---|---|---|---|---|
| | | Pre-care | After care | Pre-care | After care |
| Reference group (29) | 85.60 ± 4.11 | 15.45 ± 5.26 | 12.02 ± 3.29 | 52.25 ± 3.46 | 47.79 ± 2.10 |
| Experimental group (30) | 92.36 ± 3.27 | 15.50 ± 5.30 | 9.89 ± 2.50 | 52.20 ± 3.55 | 43.38 ± 1.89 |
| *T*-value | 7.783 | 0.153 | 6.633 | 1.123 | 8.593 |
| *P*-value | ＜ 0.003 | 0.893 | ＜ 0.003 | 0.553 | ＜ 0.003 |

## 4. Discussion

Treating dry eye disease has always been a major challenge in the field of ophthalmology, which not only affects patients' vision but also seriously reduces their quality of life and can cause other complications. Therefore, it is important for patients to explore more effective treatment strategies. The patients with dry eye are divided into the reference group and the experimental group, and received different courses of treatment respectively. The results showed that the synergistic effect of eye care measures and drug combination therapy cannot be ignored. In terms of the excellent and good rate of treatment, the reference group had an excellent and good rate of 68.97%, while the experimental group had a better treatment response, with an excellent and good rate of 93.33%. There was a significant difference between the two groups ($P = 0.013$), which was statistically significant. This indicates that the treatment received by patients in the experimental group significantly improves the therapeutic effect and should receive more attention in medical practice. This result proves that the comprehensive intervention measures combining eye care and drug therapy can significantly improve the treatment effect of dry eye disease, and provides strong evidence for clinical treatment.

The combined interventions also had a positive impact on patients' quality of life. The quality of life is assessed through three dimensions: social function, psychological function, and physiological function. The quality of life score of the experimental group was significantly higher than that of the control group in all dimensions after intervention ($t = 4.573$, $P < 0.003$), indicating that the comprehensive treatment program had a better effect on improving the quality of life of patients.

The significant benefits demonstrated by the trial group also demonstrate the importance of combining eye care with medication. After intervention, the score of nursing satisfaction of the experimental group was significantly improved, which was higher than that of the control group. Not only did the symptoms improve, but the SAS score was also better. The error is controlled within 3 parts per thousand, clearly verifying the important role of comprehensive treatment in improving patients' mood and quality of life.

Patients responded positively to the comprehensive intervention in the trial group, clearly demonstrating the criticality of combining eye care with medication. This combined effect is not only reflected in the treatment efficiency, but also expands the psychological, physiological, and even social functions of patients, providing a

more comprehensive treatment method for patients with dry eye.

Future research areas should further explore the integration of various forms of eye care and drug therapy, aiming to create a more effective treatment path that is more tailored to each unique case, in order to alleviate the daily discomfort of dry eye patients and improve their living standards.

Dry eye is an eye disease caused by multiple causes, which not only damages the vision of patients, but also reduces their quality of life. In the treatment of dry eyes, medication is not the only means, eye care is also crucial. By implementing a combination of eye care and medication in patients with dry eye, the multifaceted impact of this combination on patients' quality of life is evaluated [1].

In the conventional drug treatment group, the average quality of life score of patients with dry eye after treatment was 61.50, with a margin of error of ± 3.78. For patients who included eye care in their treatment regimen, the same score rose to 67.95 on average, with a margin of error of ± 4.20 points. Whether it was daily work ability, mental state, or physical health, the treatment regimen that included eye care outperformed the condition with medication alone after the intervention, and the improvement was statistically significant. It is clear that nursing interventions play an important role in improving the overall quality of life of people with dry eye. Nursing interventions, such as regular eye cleaning, drying protection, and the use of wet dressings, not only help to slow the exacerbation of symptoms, but also improve the efficacy of drugs by improving the quality and quantity of tears and optimizing the ocular microenvironment, thereby improving the overall satisfaction of patients with treatment [2].

Further analysis showed that dry eye syndrome, as a chronic disease, has a long-term impact on the psychological and physiological state of patients, which may lead to increased mental stress, decreased sleep quality, and even affect daily work and interpersonal communication [3].

Through professional nursing technology to effectively alleviate the trouble of dry eye, not only optimizing the eye environment, but also helping patients to restore the function of daily life, reshaping the social active image. Especially for the special groups with severe course of dry eye disease and special sensitivity to life satisfaction, the combination of eye care and medicine has achieved remarkable results. According to the quality of life and nursing satisfaction as evaluation indicators, patients with dry eye disease significantly feel an improvement in their life after receiving eye care and drug treatment, which proves the effectiveness of comprehensive therapy. Therefore, in order to improve the health level and quality of daily life of patients with dry eye, it is recommended to combine drug treatment with eye care, and apply various nursing interventions, which is the link that clinicians need to pay special attention to [4].

Future research could go further and examine how the combination of care and medication may affect long-term outcomes and living standards for patients with dry eye. People with dry eyes often complain of dry eyes, foreign body sensation, and fatigue, which seriously affect their quality of life and mental state. The researchers divided the patients into a test group and a control group, looking carefully at the advantages of nursing combined with medication and their substantial improvements in patients' quality of life and mental health.

In the course of treatment, nursing satisfaction has become an important criterion to evaluate patients' overall satisfaction with treatment. After receiving special care and drug combination therapy, the satisfaction of the experimental group on nursing was significantly improved from the original 92.36 ± 3.27 points, even higher than the 85.60 ± 4.11 points of the reference group ($P < 0.003$), which proved that patients in the experimental group had higher satisfaction with the treatment plan.

After receiving comprehensive nursing measures combined with drug therapy, the treatment satisfaction of

dry eye patients will be significantly improved. Depression, anxiety and other psychological aspects of the impact on the treatment of disease and quality of life is indeed significant. Anxiety state assessment criteria (SAS score) can directly reflect the psychological state of patients [5]. According to the study, the SAS score of the experimental group decreased from 52.20 ± 3.55 points before treatment to 43.38 ± 1.89 points after treatment. In contrast, SAS scores in the control group declined less, from 52.25 ± 3.46 to 47.79 ± 2.10. There was a significant difference in SAS score decline between the experimental group and the reference group ($P < 0.003$), which indicated that the comprehensive treatment strategy could significantly reduce the anxiety level of patients.

Symptom score directly reflects the improvement of the patient's condition and is one of the important indicators to evaluate the treatment effect. The symptom score of the experimental group decreased from 15.50 ± 5.30 before intervention to 9.89 ± 2.50 after intervention, while the symptom score of the control group decreased from 15.45 ± 5.26 before intervention to 12.02 ± 3.29. There was a significant difference in symptom score between the two groups ($P < 0.003$). This result further confirmed that drug therapy combined with comprehensive eye care measures can more effectively relieve the clinical symptoms of dry eye patients.

## 5. Conclusion

In conclusion, the combination of drug therapy and comprehensive eye care measures has a significant promoting effect on improving the treatment rate, quality of life and mental health of patients with dry eye. Careful and thoughtful care can enhance patients' confidence in the treatment plan, relieve their mental stress, and thus enhance the treatment effect, improve dry eye symptoms, and enhance their quality of life. It should be paid attention to and promoted in clinical practice.

## Disclosure statement

The authors declare no conflict of interest.

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