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НОВЫЙ ДЕНЬ В МЕДИЦИНЕ
NEW DAY IN MEDICINE

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PROCESS FOR SCREENING COMPLIANCE OF PATIENTS IN TREATING DIABETES MELLITUS

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✓ ***Resume***

This article describes the results of a study on the adaptation, implementation and evaluation of the effectiveness of the mobile application "MyTherapy" in the practice of treating diabetes mellitus in order to control the treatment and compliance of patients. Based on the more pronounced positive dynamics of the therapy itself, improvement in the quality of life indicator and the indicator of adherence to treatment, it is shown that the use of this mobile application can be a highly effective method of monitoring diabetes mellitus therapy if used correctly.

Keywords: diabetes mellitus, compliance; therapy monitoring; mobile applications.

BEMORLARNING QANDLI DIABETNI DAVOLASHDA MUVOFIQLIGINI SKRINING JARAYONI

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✓ ***Rezyume***

Ushbu maqolada bemorlarning davolanishi va muvofiqligini nazorat qilish maqsadida qandli diabetni davolash amaliyotida “MyTherapy” mobil ilovasini moslashtirish, joriy etish va samaradorligini baholash bo‘yicha o‘tkazilgan tadqiqot natijalari bayon etilgan. Terapiyaning o'ziga xos ijobiy dinamikasi, hayot sifati ko'rsatkichining yaxshilanishi va davolanishga rioya qilish ko'rsatkichidan kelib chiqqan holda, ushbu mobil ilovadan foydalanish diabetes mellitus terapiyasini kuzatishning yuqori samarali usuli bo'lishi mumkinligini ko'rsatdi. to'g'ri.

Kalit so'zlar: diabetes mellitus, muvofiqlik; terapiya monitoringi; mobil ilovalar.

Relevance

According to the data of multicenter UNICEF studies conducted in Uzbekistan in 2017, approximately every seventh child in the country (15.6%) suffers from anemia. At the same time, 1% of patients have a severe form of anemia among patients with TYPE 2 diabetes. About 20.3% of women of reproductive age and 32.7% of pregnant women also had pronounced symptoms of anemia [1,2]. The study of patients' attitudes to the prescribed therapy and the degree of its compliance is a fairly new area of scientific research. The development of this area is due to the large role of the paradigm of interaction between doctor and patient, the transition from a paternalistic model to partnerships and the patient's awareness of his own active role in therapy [3,4,5,6].

Inadequate adherence to medication is a probable cause of ineffective therapy for type 2 diabetes. Patient adherence, or compliance, to treatment is usually defined as the degree to which patients follow doctor's orders [7,8,9]. Insufficient compliance is a common phenomenon and a problem for the healthcare systems of many countries. According to WHO, in developed countries only 50% of patients with type 2 diabetes strictly follow doctor's recommendations for a long time, in developing countries the figure is even lower [10,11,12].

The beginning of the third decade of the 21st century was characterized by the rapid development and spread of electronic "gadgets" in all aspects of society. In this regard, one of the most relevant areas of medicine today is the improvement of the process of diagnosis, treatment and prevention of various diseases through the introduction of special mobile applications. A huge advantage of such software is that "gadgets" (smartphones, tablets, laptops, smart watches) are in the hands of the average person, according to sociological research, for 12-16 hours a day, which determines their high potential in terms of impact on the patient.

Purpose of the study: Adaptation and implementation of modern mobile applications designed to monitor medication intake in the process of therapy of patients with type 2 diabetes, and evaluation of their effectiveness in terms of increasing patient compliance.

Material and research methods

The study included 60 patients with type 2 diabetes mellitus (hemoglobin level 90-70 g/l). The average age of patients was 24.23±3.42 years. Gender distribution: 48 women (80%) and 12 men (20%).

All patients received outpatient treatment for diabetes. To assess the effectiveness of the mobile application for compliance monitoring, patients were divided into 2 groups homogeneous in age and gender ratio:

- the main group included 30 patients whose compliance with therapy was monitored using the MyTherapy mobile application;
- the control group included 30 patients who were treated for anemia without compliance monitoring.

There are more than 10 medication management apps available on the Internet, the interface and functionality of which can be used to improve patient compliance in the treatment of type 2 diabetes. We chose the MyTherapy app. This app is widely available on the Internet and is available for free download on devices running both Android and IOS. The app has a fairly wide range of functions.

First of all, you can enter information about taking the drug, its form, frequency of administration, time of administration and duration of the course of treatment in the application. After entering the relevant information about the time of taking the drug, a special signal in the form of music or other sound will be triggered, which will announce the time of taking the drug. When the signal appears, the application requires confirmation of taking the drug, which is important for recording the fulfillment or non-fulfillment of the doctor's prescription. Daily drug intake is recorded and stored in the form of a report (in pdf format), which can then be printed or sent by e-mail to the attending physician.

In addition to reminders about taking medications, the application can include notifications about doctor visits, type 2 diabetes tests, and any preventive measures (gymnastics, walking, etc.), the registration and implementation of which will also be recorded in a special report.

A separate section can be used to enter the results of various measurements and analyses. A separate section is dedicated to checking the symptoms of the disease, which is important when monitoring the dynamics of therapy and its effectiveness.

During the study, this application was installed on smartphones or tablets of all patients with anemia who were included in the study. After installing the mobile application, the doctor entered the names of the drugs, their dose, dosage form, time of administration and duration of therapy (3 months for all patients). The dates of follow-up visits to the doctor (once a month), dates of type 2 diabetes blood tests for glucose levels (once a month) were separately noted.

To remind, the applications included precisely those activities that are often neglected by most patients. However, these activities are of great importance in monitoring the course of therapy and correspond to generally accepted standards.

During the therapy, all patients included in the main group informed the doctor weekly about the progress of therapy by sending a report on the appointment and the implementation of other prescriptions via the Telegram messenger.

Statistical processing of the obtained data was carried out using the statistical software package "Microsoft Excel". The data are presented as mean values and error of the mean.

Result and discussions

Analysis of the average number of missed doses of therapy showed that during the first month of therapy, patients in the main group missed taking the prescribed medications 6.8±2.1 times, while by the 3rd month the indicator had significantly improved and was 2.4±1.8 misses on average. Analysis of the average number of untimely doses of medications during the first month was 14.2±4.3 times, while by the third month it was

6.3±3.2 times. Analysis of the average number of missed doses of vitamin preparations showed that during the first month of therapy, patients in the main group missed taking the medications 12.5±3.5 times, while by the 3rd month the indicator had significantly improved and was 4.4±2.6 misses on average. Analysis of the average number of untimely doses of vitamin preparations during the first month was 17.7±4.4 times, while by the third month it was 8.3±3.7 times (Table 1).

Table 1.

Average number of missed medication doses in patients in the main group according to monthly MyTherapy reports.

Medications taken	Average number of missed doses		Average number of untimely drug intake	
	1 month	3 month	1 month	3 month
Drugs of the therapeutic group in the treatment of diabetes	6.8±2.1	2.4±1.8	14.2±4.3	6.3±3.2
Vitamins	12.5±3.5	4.4±2.6	17.7±4.4	8.3±3.7

Analysis of the results of the adherence assessment using the Morisky-Green scale after 3 months of therapy showed that the proportion of non-adherent patients in the main group was 10%, while in the control group it was 4 times higher.

The number of adherents to therapy was 73% in the main group, while in the control group it was only 10%. Observations of the dynamics of hemoglobin growth in the study groups showed that the main group had a higher level of its monthly increase in the blood (Fig. 1). By the end of the 3rd month, the hemoglobin level in the main group averaged 121 g/l, while in the control group it was 111 g/l.

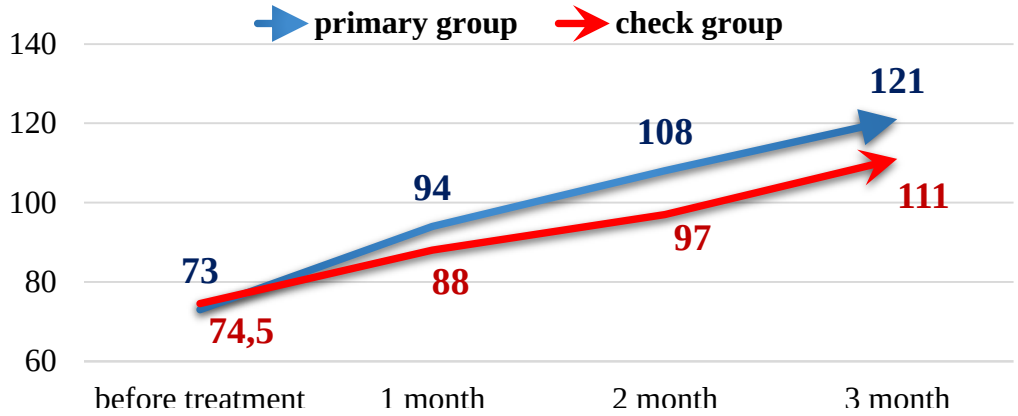

Figure 1. Results of determining the hemoglobin level of patients over time.

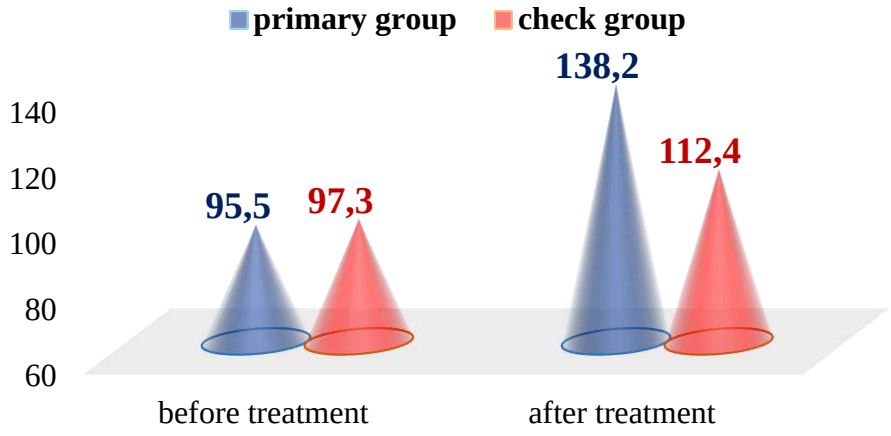

Figure 2. Results of assessing the quality of life of patients over time.

Along with the increase in hemoglobin levels, patients in the study groups also showed an improvement in the QOL indicator, the values of which according to the FACT-An test were 95.5 and 97.3 points in the main and control groups, respectively. After treatment, the average indicator of patients in the main group increased to 138.2 points, while in the control group it increased to 112.4 points (Fig. 2).

In this regard, anemia has a significant impact on the quality of life of patients. Assessment of the quality of life of patients using the FACT-An questionnaire showed that patients who underwent diabetes therapy under the control of the MyTherapy mobile application had significantly higher rates. It should also be noted that patients in the main group visited their doctor significantly more often during therapy, which was prescribed in the treatment. The main group of patients also had higher average rates of planned and prescribed visits to the doctor (3.4 visits), as well as a higher average number of blood tests prescribed by the doctor (3.1 tests).

Conclusion

Observations of patients during 3 months who received treatment showed that patients of the main group had significantly higher compliance rates according to the Morisky-Green scale, and higher quality of life rates compared to patients of the control group. Based on the demonstrated effectiveness, availability and simplicity, the proposed method can be recommended for implementation in wide medical practice.

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