PROGRAM FOR THE FUNDAMENTAL IMPROVEMENT OF PHARMACOEPIDEMIOLOGY, PREVENTION, AND TREATMENT METHODS FOR POST-COVID-19-ASSOCIATED DIGESTIVE SYSTEM DISEASES

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Abstract. Pharmacotherapy was audited in 1,605 COVID-19 survivors aged 48-60 years in Fergana. Treatment met clinical standards in 87.8% of women and 65.1% of men ($p<0.001$). A multi-component program raised diagnostic and treatment effectiveness from 50.0% to 100.0%.

Keywords: post-COVID-19 condition; digestive system diseases; pharmacoepidemiology; pharmacotherapeutic compliance; regional program.

INTRODUCTION

Post-COVID-19 condition reaches well beyond the respiratory tract (Nalbandian et al., 2021), and gastrointestinal complaints are among the symptoms that persist longest: in a cohort of 154,068 survivors the risks of acid-related and motility disorders, pancreatitis, and hepatobiliary disease stayed elevated for a full year (Xu et al., 2023). Patients with post-COVID-19-associated digestive system diseases (DSD) therefore accumulate prescriptions from several specialists at once. The pandemic has already shown where that leads: 74.6% of COVID-19 patients received antibiotics while bacterial co-infection was estimated at 8.6% (Langford et al., 2021). How far everyday prescribing for these patients drifts from clinical standards has never been measured in the Fergana Valley.

The aim of this work was to describe the pharmacoepidemiological profile of post-COVID-19-associated DSD in the Fergana Valley and to develop a program that improves prevention and treatment of this condition.

MATERIALS AND METHODS

The study included 1,605 residents aged 48-60 years with a history of COVID-19 infection, registered and monitored at Fergana city polyclinics from 2022 to 2024. Women accounted for 853 patients (53.1%) and men for 752 (46.9%); mean age 54.2 ± 3.6 years. DSD appeared 4.8 ± 2.1 months after the acute infection.

Prescribing was reconstructed from case histories and outpatient records, covering 100% of participants, and from a pharmacoepidemiological questionnaire. Every regimen was evaluated by VEN analysis against national and international guidelines, and was rated compliant when drug class, dose, and duration all matched the standard; any departure counted as a pharmacological risk factor. Patients received 4.3 ± 1.5 drugs over 12.6 ± 4.2 days.

Data were processed in IBM SPSS Statistics 27.0. Continuous variables are given as M ± SD, proportions with 95% Wilson confidence intervals (CI); groups were compared by the chi-square test with odds ratios (OR), $p < 0.05$.

RESULTS

Across the cohort, pharmacotherapy met clinical standards in 1,239 patients (77.2%; 95% CI 75.1-79.2), leaving 484 (30.2%; 95% CI 28.0-32.4) exposed to at least one pharmacological risk factor.

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The gender gap was wide and consistent. Treatment was adequate in 87.8% of women (95% CI 85.4-89.8) against 65.1% of men (95% CI 61.6-68.4), a difference of 22.7 percentage points ($\chi^2 = 116.5$; $p < 0.001$; OR = 3.85; 95% CI 2.99-4.96). Risk factors ran the same line in reverse: 22.2% against 39.2% (95% CI 19.5-25.1 and 35.8-42.7), a 17.0-point difference ($\chi^2 = 55.3$; $p < 0.001$; OR = 0.44; 95% CI 0.35-0.55). A man here was almost twice as likely as a woman to be treated outside the standard.

On these findings a multi-component program for the prevention and treatment of post-COVID-19-associated DSD was developed and joined to a system of epidemiological monitoring. After its introduction the effectiveness of diagnosis, assessment, treatment, and prevention rose from 50.0% to 100.0% ($\chi^2 = 322.7$; $p < 0.001$).

DISCUSSION

Almost one patient in three met a pharmacological risk factor, and men carried most of that burden. Later presentation, lower adherence, and fewer follow-up visits are plausible explanations, although the present design cannot separate them. Whatever the mechanism, men are where pharmacological supervision should start.

The practical lesson lies in how the system answered a standards-based protocol: deviations of this kind proved correctable without new drugs or new equipment, which places the problem within reach of ordinary outpatient services. The chief limitation is a before-and-after assessment in one region, so a controlled design is needed to confirm the effect size.

CONCLUSION

Post-COVID-19-associated digestive system disease is treated well in women and unevenly in men: compliance falls from 87.8% to 65.1% between the groups, and almost a third of all patients meet a pharmacological risk factor somewhere in their regimen. These are failures of supervision, and supervision can be organised. A multi-component program joined to epidemiological monitoring lifted diagnosis, assessment, treatment, and prevention from half effectiveness to full. The prescription that mattered most was written for the system.

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