

## NOTE

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# EFFECTIVENESS OF IMPLEMENTATION OF GASTRIC AND DUODENAL ULCER CLINICAL PROTOCOL IN THE KYRGYZ REPUBLIC

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## ABSTRACT

The introduction of a clinical protocol for the treatment of gastric and duodenal ulcer (GDU) may be one of the solutions for the high morbidity and complications of these diseases. This descriptive study was carried out to evaluate the effectiveness of the implementation of the GDU clinical protocol in the Kyrgyz Republic introduced in 2002. The effectiveness of the introduction of the clinical protocol into primary health care practice was assessed by the numbers of hospitalizations and operations due to GDU. As the result of the clinical protocol implementation for the treatment of GDU, the numbers of hospitalizations and operations have decreased in Kyrgyz Republic. The total number of hospitalized GDU patients was reduced in 2003 by 12% from the 2001 level. The number of operations due to GDU complications decreased in 2003 by 30% compared with 2001. The protocol-driven approach showed the potential to become a feasible method to improve the quality of health care in Kyrgyzstan. However, the prospective long-term effects, including their cost-effectiveness, should be evaluated in Kyrgyzstan.

Key Words: Gastric and duodenal ulcer, Implementation of the clinical protocol, Hospitalization rate, Operation rate.

## INTRODUCTION

Physicians cannot possibly read all the scientific publications. At the same time, medicine has been experiencing rapid technological development in such areas as the introduction of costly methods new equipment and drugs. Determining the optimal low cost for developing an up-to-date health care system and to gauge its effectiveness for patients has been a major concern of policy makers in the health care field, especially among developing countries.

Guidelines and protocols help physicians offer the best possible care for their patients by providing recommendations based on scientific evidence and expert clinical opinions.<sup>1)</sup> In 2001, the National Council of Clinical Protocol Development and Implementation was organized in Kyrgyzstan. Members of the National Council included leading specialists from the Ministry of

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Health (MOH), Mandatory Health Insurance Fund (MHIF), scientific research centers and medical institutes. The clinical protocols for a Primary Health Care System (PHCS) were launched, the first of which was a protocol for hypertension and the second for gastric and duodenal ulcers (GDU). Clinical protocols were introduced into PHCS in 2002 by training courses.

This study aimed to evaluate the effectiveness of the implementation of the clinical protocol for GDU, which has high rates of morbidity and complications in the Kyrgyz Republic based on a comparison of the numbers of total GDU patients, hospitalized patients and operations before and after the implementation of the clinical GDU protocol.<sup>2)</sup> As is the case in other countries with a high *Helicobacter pylori* (*H. pylori*) infection rate, the main treatments of GDU in Kyrgyzstan are focused on *H. pylori* eradication, since the causal relation between GDU and its curability are quite clear.<sup>3-5)</sup> The operations for GDU were reportedly decreasing in many countries as a result of effective treatment of GDU with *H. pylori* eradication.<sup>6,7)</sup> In some developed countries, *H. pylori*-related ulcers are rare. The ulcers associated with the use of non-steroidal anti-inflammatory drugs pose a major problem.<sup>8)</sup>

## MATERIALS AND METHODS

The numbers of patients with GDU registered at PHCS were obtained from the Republican Medical Information Center under the MOH of Kyrgyzstan. The numbers of hospitalized patients and operations due to the GDU were obtained from the Hospital Data Base of the MHIF, MOH. The data for 2001 and 2003 were used for the comparisons.

In Kyrgyzstan, digestive ulcers are diagnosed using X-ray testing and/or endoscopy, though in rural areas the facilities with an endoscopy are still rare. Since the Maastricht Consensus Report stated that *H. pylori* infection rate was more than 90% among duodenal ulcer patients and 80% among gastric ulcer patients, the clinical protocol of Kyrgyzstan recommended that duodenal ulcer patients should be treated without an *H. pylori* test and gastric ulcer patients after an *H. pylori* test. However, the eradication treatment without the test was not rare for gastric ulcer patients.

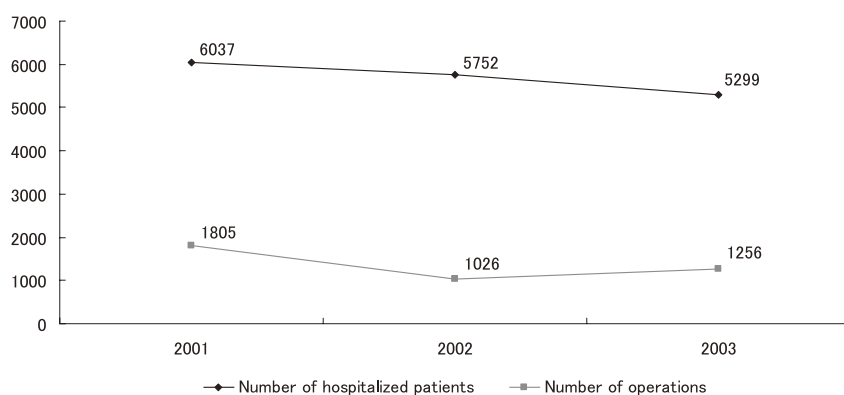
The clinical protocol for the treatment of *H. pylori*-associated GDU includes triple therapy for one week: omeprazole 20 mg twice, amoxicillin 1 g twice, and metronidazole 250 mg four times a day. If *H. pylori* is not eradicated, quadruple therapy is then used for one week: omeprazole 20 mg twice, bismuth subsalicylate 120 mg four times, amoxicillin 1 g twice, and metronidazole 250 mg four times a day. In GDU cases unassociated with *H. pylori*, only omeprazole 20 mg twice, famotidine 40 mg once, or ranitidine 300 mg once a day is used for 4-8 weeks.

The effectiveness of the introduction of clinical protocols into the PHCS was assessed based on the numbers of hospitalizations and operations for GDU. The hospitalization and operation rates of all patients with GDU were compared for the entire country and then according to provinces. An  $\chi^2$  test was used for the comparison of rates with the STATA version 7 software program (STATA Corporation Inc., College Station, TX, USA).

## RESULTS

As shown in Fig. 1, after the introduction of clinical protocols, the total number of hospitalized GDU patients in the Kyrgyz Republic was reduced by 12% in 2003 from the 2001 level. The comparative analyses before and after the introduction of the GDU protocol revealed that the hospitalization rate due to GDU significantly declined in most provinces (Batken, Galalabat, Issikul, Narin, and Osh). However, it increased in the capital city Bishkek, Chui Province, and

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**Fig. 1** Number of hospitalized patients and operations due to gastric and duodenal ulcer in the entire country during 2001 to 2003.

**Table 1** Number of hospitalized patients, total number of patients, and hospitalization rate due to gastric and duodenal ulcer by capital and provinces.

Region	2001			2003		
	Hospitalized	Total	Rate	Hospitalized	Total	Rate
<b>Bishkek (capital)</b>	1,385	3,665	0.38	1,551	3,376	0.46**
<b>Batken</b>	568	1,189	0.48	342	1,189	0.29**
<b>Chui</b>	534	3,483	0.15	883	3,188	0.28**
<b>Galalabat</b>	993	2,629	0.38	573	1,920	0.30**
<b>Issikul</b>	651	1,901	0.34	460	1,794	0.26**
<b>Narin</b>	258	484	0.53	173	709	0.24**
<b>Osh</b>	1,527	3,672	0.42	1,170	3,494	0.33**
<b>Talas</b>	121	615	0.20	147	560	0.26*
<b>Total</b>	6,037	17,638	0.34	5,299	16,230	0.32*

\*  $p < 0.01$  and \*\*  $p < 0.001$

**Table 2** Number of operated patients, total number of patients, and operation rate due to gastric and duodenal ulcer by capital and provinces.

Region	2001			2003		
	Operated	Total	Rate	Operated	Total	Rate
<b>Bishkek (capital)</b>	575	3,665	0.16	432	3,376	0.13*
<b>Batken</b>	58	1,189	0.05	44	1,189	0.04
<b>Chui</b>	364	3,483	0.10	266	3,188	0.08*
<b>Galalabat</b>	163	2,629	0.06	114	1,920	0.06
<b>Issikul</b>	128	1,901	0.07	122	1,794	0.07
<b>Narin</b>	75	484	0.15	56	709	0.08**
<b>Osh</b>	391	3,672	0.11	187	3,494	0.05**
<b>Talas</b>	51	615	0.08	35	560	0.06
<b>Total</b>	1,805	17,638	0.10	1,256	16,230	0.07**

\*  $p < 0.01$  and \*\*  $p < 0.001$

Talas Province (Table 1).

The number of operations for GDU complications in the country dropped by 30% in 2003 relative to 2001 (Fig. 1). In all provinces the number of operations for GDU decreased after the introduction of the protocol, as shown in Table 2. The operation rate significantly decreased in Narin, Osh, Bishkek, and Chui Provinces. In Batken and Talas Provinces, the reduction was not significant. The operation rate remained in Galalabat and Issikul Provinces.

## DISCUSSION

Medical professionals around the world have increasingly used clinical protocols over the last 15 years. The important issues in protocol development are the need to strengthen both knowledge and professional competence within the medical field and to improve the quality of treatment.<sup>2,9)</sup> Another major issue is the cost effectiveness of using clinical protocols. Questions of employing optimal interventions under a low cost for health care system and its effectiveness for patients have been arisen. The Kyrgyz Republic introduced mandatory health insurance in 1997, and insurance that covered 84% of the total population in 2004.<sup>1)</sup> The insurance fund was authorized to grant contracts to service providers, which worked in introducing payment incentives to make health care services more efficient and effective. For this purposes, the MOH of the Kyrgyz Republic introduced the implementation of protocols into health care practice.

A significant volume of medical literature on protocol-based care exists.<sup>10)</sup> Among the abundance of general descriptive reports on development and implementation, there were a moderate number of researches on evaluation.<sup>11)</sup> The usefulness of protocol-based care was still under discussion in the literature, with the majority of authors concluding that it had some positive effects. The degree of usefulness and the expected outcomes of the protocol implementation were unclear, especially in the Kyrgyz Republic.<sup>12)</sup> Consequently, this study attempted to determine the changes of outcomes in GDU patients as a result of clinical protocol introduction.

Following the decades of high morbidity rates, the introduction of evidence-based protocols into the health care system was the first attempt to improve medical care for GDU patients in the Kyrgyz Republic.<sup>12)</sup> Since a lack of data made it impossible to reliably identify middle- and long-term outcomes for patients with GDU, we selected the annual number of hospitalizations and surgical operations related to the diseases in 2001 and 2003. The short follow-up period is one limitation of this study.

Usually, surgical diseases, including GDU, pose risks of relapses and complications such as bleeding, perforation, penetration, and obstruction.<sup>13,14)</sup> As a consequence, substantial resources are used for the inpatient management of GDU. Introduction of the GDU protocol has brought significant changes in the management of this condition. As shown in the results section, the number of hospitalized patients in the entire country declined, although the trend was different among the provinces. In more developed Bishkek city and Chui Province, the number of hospitalized patients increased from 2001 to 2003, possibly due to the great number of referral movement to those areas to obtaining better medical care. In the other five provinces (Batken, Galalabat, Issikul, Narin, and Osh), introduction of the GDU protocol resulted in the aimed for reduction in the hospitalized patients.

Another important indicator in the assessment of the effectiveness of intervention was the rate of operations, which the present study revealed declined for the entire country in 2003 ( $p < 0.001$ ). A similar phenomenon was observed in other countries.<sup>6,7)</sup> In Talas and Batken Provinces the decline was not significant because they still remained the poorest provinces in the Kyrgyz Republic characterized by a less developed medical care system.

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Routine use of the *H. pylori* eradication protocol for all patients with GDU represents the potential of steady improvement in GDU care, as well as of a substantial saving of resources. Those safely treated can feel reassured that they can avoid surgical operations and unnecessary complications.

In conclusion, the number of hospitalizations and operations has been reduced in the Kyrgyz Republic as a result of clinical protocol implementations for the treatment of GDU. Prospective long-term evaluations, including cost-effectiveness measures, should be undertaken to further implement this policy in the Kyrgyz Republic.

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