



## Strategies for Family Physicians: Implementing State Standards for COVID-19 Identification and Management in Tbilisi (Georgia)

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### Abstract

Epidemics and pandemics pose significant challenges to public health systems worldwide, with family physicians playing a crucial role in their management. The COVID-19 pandemic has highlighted the vulnerabilities of Georgia's healthcare system, particularly in primary care. This original article examines the multi-functional role of family physicians in managing epidemics and preventing their spread, based on state protocols for clinical condition management. Specifically, it focuses on the timely assessment and management of cases, coordination with other healthcare services, determination of necessary laboratory and instrumental interventions, prevention of unnecessary hospitalizations, and appropriate referral services.

A cross-sectional survey design was employed, incorporating both quantitative and qualitative methods. A questionnaire, approved by the university's bioethics committee, served as the primary survey instrument. Data were analyzed using SPSSv.22.0, with statistical reliability assessed via the Chi-squared test ( $p < 0.05$  indicating statistical significance). In-depth interviews were conducted with family physicians, patients, and medical center managers to gather qualitative insights. The survey questions were largely derived from the state standard protocol for managing suspected COVID-19 cases.

The research findings indicate that family physicians are capable of identifying and managing a range of clinical conditions related to COVID-19, including severe acute respiratory infections, acute respiratory distress syndrome, and pneumonia. They effectively manage and coordinate cases with mild to moderate symptoms both in-person and via home treatment, distinguishing COVID-19 from other respiratory infections. Early diagnosis by family physicians has reduced the demand for medical services and improved the management of COVID-19 in patients with chronic conditions such as asthma and diabetes. The study also highlights the importance of timely emergency notifications and the implementation of preventive measures in primary healthcare settings.

The research underscores the critical role of the primary healthcare system, particularly family physicians, in managing and preventing epidemics. The findings demonstrate the importance of timely case assessment, coordination with other healthcare services, and adherence to state protocols in managing clinical conditions during the COVID-19 pandemic. This approach has helped prevent unnecessary hospitalizations and ensured effective referral services, addressing unforeseen challenges in healthcare delivery.

**Keywords:** COVID-19; Family Physician; COVID -19 Management Standard Protocol

**Introduction**

Epidemics and pandemics pose significant challenges to public health systems throughout the world, and family physicians play an important role in their management. The infectious disease COVID-19 caused by the novel corona virus (SARS-CoV-2) turned out to be a serious indicator for exposing the weak sides of the health care system of Georgia, mainly in primary health care. Standardized protocols for the identification and management of COVID-19 cases were urgently needed to ensure the effective and consistent care. The Georgia Family Medicine Association, together with the recommendations of the World Health Organization and the experts of the Ministry of Internally Displaced Persons from the Occupied Territories, Health, Labour, and Social Affairs of Georgia, developed a protocol for the management of suspected cases of infection caused by the novel corona virus (SARS-CoV-2) in primary health care. Based on the Protocol it was possible to ensure the timely assessment and management of cases with slightly and moderately expressed signs of the disease by the family physician during the pandemics, coordination with other types of healthcare services, determination of laboratory and instrumental interventions, prevention of the hospitalization cases and the referral services. In Georgia, the first case of COVID-19 was recorded on February 27, 2020. There was a total of 1,655,221 confirmed cases, including 16,811 deaths, 65% of the dead had been with concomitant chronic diseases. There was a total of 2,882,587 people vaccinated [1,2].

**Clinical conditions and interventions covered by the Protocol**

1. Name of the clinical condition	ICD10 code
Infection caused by the novel coronavirus (SARS-CoV-2) (COVID-19)	U07.1:
Severe acute respiratory infection	J09- J22
Acute respiratory distress syndrome	J80:
Pneumonia, without specifying the cause	J18:
Severe acute respiratory syndrome	U04:
2. Name of intervention	NCSP
X-ray of thoracic cavity organs	GDDA1:
Computed tomographic examination of thoracic cavity organs	GDDD1A:
3. Name of laboratory service	
Complete blood test	BL.6:
The C-reactive protein (CRP) test RNA test of SARS-CoV-2 in nasopharyngeal smear by polymerase chain reaction method	BL.7.9.1:

**Table 1**

The results presented in the article are based on original research and represent an important part of the doctoral research project “Primary Healthcare - Multifunctional Role of the family Physician in the Management and Prevention of Epidemics in Tbilisi (Georgia)”.

**Materials and Methods**

The research was conducted in 35 outpatient centers in Tbilisi. 298 family physicians (n = 298), 396 patients (n = 396) and 17 managers (n = 17) of the selected outpatient centers participated. A cross-sectional survey design was employed, incorporating both quantitative and qualitative methods. A questionnaire, approved by the university’s bioethics committee, served as the primary survey instrument. Data were analyzed using SPSSv.22.0, with statistical reliability assessed via the Chi-squared test (p < 0.05 indicating statistical significance). In-depth interviews were conducted with family physicians, patients, and medical center managers to gather qualitative insights. A significant part of the questions was prepared based on the state standard (Protocol) for the management of suspected cases of the infectious disease COVID-19.

**Results**

The 298 (n = 298) participating family physicians were divided into four age groups: Group 1 (age 31-40), Group 2 (age 41-50), Group 3 (age 51-60), and Group 4 (age >60). The survey revealed a significant prevalence of family physicians aged 51-60 years and over 60 years. 99.3% of the physicians participating in the survey had a family physician’s certificate (Chi<sup>2</sup> = 290.05, df = 1, p < 0.001). There was a significant prevalence of physicians (90%) who had 10 years or more of work experience (Chi<sup>2</sup> = 445.01, df = 2, p < 0.001). Family physicians participating in the survey (68.4%) noted that in the conditions of the COVID-19 pandemics, patients’ referral increased (Chi<sup>2</sup> = 319.18, df = 3, p < 0.001). There was a significant prevalence of family physicians (89.5%) who were at least partially informed about the updated guidelines and protocols for diagnosing and treating diseases via the Internet (Chi<sup>2</sup> = 427.66, df = 2, p < 0.001) 96.0% of physicians noted that they regularly informed patients about the need for a vaccine against COVID-19 (Chi<sup>2</sup> = 251.93, df = 1, p < 0.001). Lesser than 4.0% of physicians more or less provided information to patients; 0.0% of physicians did not provide such information at all (see Chart 1).

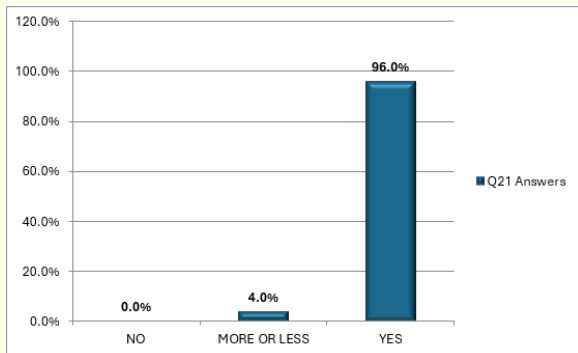
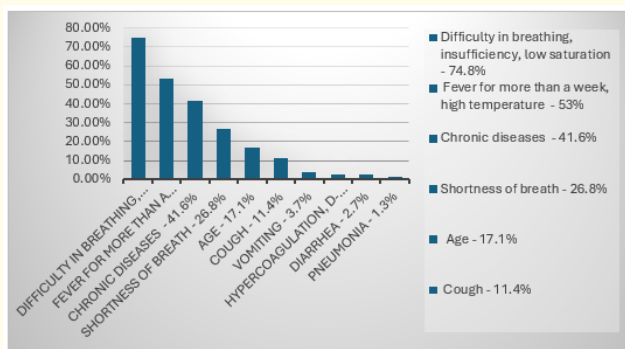


Chart 1



Graph 1

In addition, the interviewed family physicians identified the main criteria that represented the indication for hospitalization of patients with a confirmed case of COVID-19 (SARS-CoV-2).

32% of the interviewed 25 family physicians indicated that they felt supported by the management during the work process during the COVID-19 pandemics, and this support was mainly expressed through the creation of working conditions, while 68% of the family physicians indicated the support from the management during the COVID-19 pandemics (see Table 2).

#	Experience, years	Observed N	% from Total	Chi2-test	df	p
1	Yes (without registering the type of support)	17	68.0%	3.24.	1	0.072
2	Yes, the type of support – providing the corresponding working conditions	8	32.0%			
	Total	25				

Table 2

84% of the interviewed family physicians indicated that the COVID-19 suspected case management protocol was helpful

during the pandemic, and 16% indicated that it was helpful when managing patients online or via the telephone conversation (see Table 3).

Experience, years	Observed N	% from Total	Chi <sup>2</sup> -test	df	p
Yes (without registering the type of support)	21	84.0%	11.56.	1	0.001
Yes, management of the patients by phone or online	4	16.0%			
Total	25				

Table 3

The analysis of the answers shows that the interviewees generally give positive answers in terms of the support by the Protocol, although only a few interviewees indicate a very general

answer - “managing patients over the phone or online”. We interested whether the interviewed family physicians had different opinions about the existing Protocol. 96% of the interviewed

family physicians answered “No”, only 4% of the family physicians indicated that they would make a change in the existing protocol related to the hospitalization of patients (See Table 4).

Experience, years	Observed N	% from Total	Chi2-test	df	p
No	24	96.0%	21.16.	1	0.000.
Yes	1	4.0%			
Total	25				

Table 4

The patients participating in the survey (n = 396) were divided into two age groups: Group 1 – (age 25-35 years;) Group 2 (age 35-55 years) And, due to the socio-economic factor, we distinguished 3 groups of patients: Group 1 - beneficiaries of the unified healthcare program n = 156 (39.4%), group 2 - beneficiaries of private insurance companies n = 178 (44.9%), and group 3 - beneficiaries with own funds n = 62 (15.7%). The majority of patients participating in the survey had higher (university) education 90.9% (Chi<sup>2</sup> = 592.24, df = 2, p < 0.001). The percentage of 56.9% of patients who were not vaccinated against COVID-19 turned out to be reliably high. 73.2% (Chi<sup>2</sup> = 85.49, df = 1, p < 0.001) of patients who reported receiving exhaustive information about the need for a vaccine against COVID-19 was reliably high. The 26.3% percentage of small number of patients who were vaccinated against COVID-19 was reliably low. The percentage of 19.7% of patients who were vaccinated against the seasonal flu vaccine was reliably low. According to the level of patient satisfaction, the percentage of patients (54%) prevailed (Chi<sup>2</sup> = 150.24, df = 2, p < 0.001) who, advised a friend, relative and a family member to register at the same health care center. The percentage of patients who were happy with the quality of their family physician’s service was also reliably high. However, if we combine the patients who are extremely unsatisfied and, and compare the number of satisfied and very satisfied patients, we see that the percentage of “unsatisfied” is significantly higher than the percentage of “satisfied” (see Chart 2).

Managers of the primary health care center had a great responsibility in fulfilling the state standard (Protocol) for the management of suspected cases of the infectious disease COVID-19. We researched how effectively the Protocol was implemented according to the evaluation of the managers of

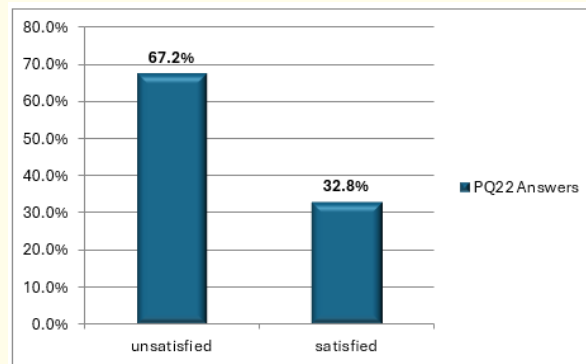


Chart 2

the centers. 17 managers (n = 17) participated in the survey. The managers of Primary care centers serving more than 2,000 beneficiaries reliably prevailed (64.7%). The managers of centers with less than 5 family physicians reliably prevailed (70.6%). The managers of centers with family physicians serving more than 15 patients a day (58.8%) reliably prevailed. In terms of evaluating the professional growth of family physicians, the managers (76.5%) prevailed reliably, in whose trainings, workshops and seminars were periodically conducted for expert family physicians. The interviewed managers (52.9%) noted that family physicians did not participate in national and scientific conferences with the direct funding of primary health care centers, while 47.1% noted that with the involvement (financing) of healthcare centers, they participated in various conferences (see Table 5).

Answers	Points assigned	N	%
No	1	9	52.9%
Yes	2	8	47.1%

Table 5

Chi<sup>2</sup> = 0.06, df = 1, p = 0.808 (NS). According to the state standard (Protocol) the highest number of recommendations made by the managers of primary healthcare centers was “vaccination” (41.2%), followed by “wearing a mask” (35.3%) (see Table 6).

Answer	Code assigned	N	%
17. 1. All provided for by the protocol	1	4	23.5%
17. 2. Distance	2	4	23.5%
17. 3. Wearing a mask	3	6	35.3%
17. 4. Isolation	4	1	5.9%
17. 5. Vaccination	5	7	41.2%
17. 6. Washing hands	6	1	5.9%
17. 7. Wearing gloves	7	1	5.9%
17.8. testing by pcr and rapid test	8	1	5.9%
17. 9. Frequency of interaction between patient and the physician	9	1	5.9%
17. 10. Disinfection	10	2	11.8%
17. 11. Sterilization	11	2	11.8%
17. 12. Medical waste management	12	1	5.9%

Table 6

Chi<sup>2</sup> = 19.7, df = 11, p = 0.0495; The measures taken for the compliance with the protocol and quality performance were evaluated by the managers as follows (see table 7).

Answer	Code assigned	N	%
18. 1. We strictly follow the terms of the protocol	1	2	11.8%
18. 2. remote monitoring	2	1	5.9%
18. 3. information campaign	3	5	29.4%
18.4. Control	4	1	5.9%
18.5. Discussion of all events at the meeting of physicians	5	2	11.8%
18. 6. Review of patients' condition	6	2	11.8%
18. 7. Training	7	2	11.8%
18. 8. Retraining	8	2	11.8%
18. 9. video clips	9	2	11.8%
18. 10. Maximum observance of sanitary norms	10	1	5.9%
18. 11. Do not know	11	6	35.3%

Table 7

Chi<sup>2</sup> = 11.2, df = 10, p = 0.340 (NS); Among all, the answers: "I don't know" (35.3%) and "Information campaign" (29.4%) predominated (although not reliably). Also, the answers to the frequency of trainings conducted for the effective implementation of the state standard (Protocol) for the management of the clinical condition against COVID-19 for the employees of the primary health care centre included in the survey were distributed by the managers as follows (See Table 8).

Answer	Code assigned	N	%
19. 1. Type 1 - individual trainings (frequency - daily)	1	3	17.6%
19. 2. Type 2 - group trainings (frequency - monthly)	2	6	35.3%
19. 3. As needed	3	7	41.2%
19. 4. Do not know	4	4	23.5%

Table 8

Chi<sup>2</sup> = 2.0, df = 3, p = 0.572 (NS); The difference between the answers was not reliable combining answers related to managers' awareness. Verification with the Chi2-test showed that the difference between these groups was also not reliable (Chi2 = 1.47, df = 1, p = 0.225, NS).

According to the state standard (Protocol) 52.9% of the managers indicated that it was hard to provide "remote work - informing the patient by telephone communication". Chi<sup>2</sup> = 25.8, df = 7, p < 0.001. According to the Managers in-depth interview answers, the frequency of the measures taken for the effective implementation of the state standard (Protocol) was distributed as follows.

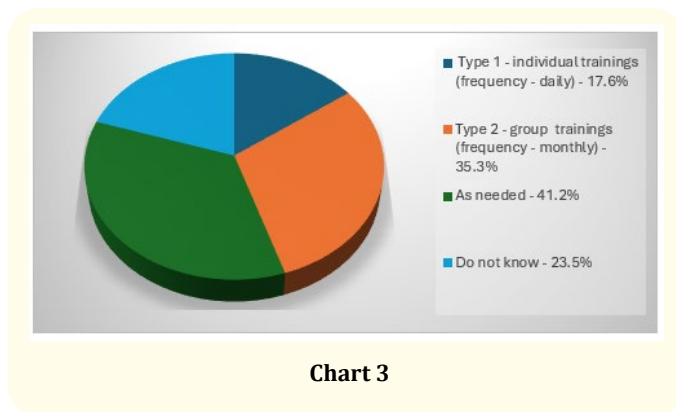


Chart 3

## Discussion

The primary health care in Georgia is still not fully developed and its functioning is not based on internationally recognized standards. The role and function of the family physician is still undefined and underestimated. This situation had a negative impact on the management and prevention of the disease of COVID-19 during the pandemics. The hypothesis of our research was that the role of family physicians in epidemic management in Georgia is influenced by their level of experience and specialization and Family physicians' involvement in epidemic management reduces hospitalizations and improves patient outcomes in Georgia. The survey results show that in a health care system where referrals to specialized medical services are made only through a family physician, health care costs are reduced and continuous medical monitoring is high [3,4]. In European countries, a family physician, without referral to other specialists, treats approximately 80-90% of patients within his/her own competence. Only 10-15% of the patients use the referral service. In Georgia, 40% of patients use the referral service. 76.5% of primary care center managers participating in our survey indicated that primary care center beneficiaries used family physicians' services mainly for referral to another specialist. This makes us believe that a significant part of the population uses medical services only in case of urgent necessity and not for the prevention. Based on the research conducted by the international foundation "Curacio", 40.1% of the surveyed respondents' express partial and 38.6% complete dissatisfaction with the institute of a family physician. As a result of our research, 67.2% of the patients interviewed expressed dissatisfaction with the family physician's service, while 32.8% of the patients were satisfied. The epidemics affect the delivery of health care services, particularly the immunization. Avoiding public gatherings reduced the rate of scheduled immunization by 30% [7,8].

During the first wave of the pandemic, Western European countries such as Italy, Belgium, Spain, and Great Britain were particularly affected. The only European country with the highest score according to the efficiency indicator is Norway. Then Germany, which turned out to be a clear example of the smooth operation of the primary health care system. Because during the first wave, 85% of those infected were treated in outpatient settings under the supervision of a family doctor, where the lowest rate of hospitalizations was recorded [9-12].

During the pandemics, improving the quality of disease management of people with suspected and confirmed COVID-19 cases by providing timely, effective and safe recommendations to primary health care personnel and patients was the most important part of the implementation of the clinical condition management standard (Protocol) of the state. 84% of the physicians participating in the survey indicated that the SARS-CoV-2 suspected case management Protocol was helpful during the pandemics, and 16% indicated that the Protocol was helpful when managing patients online or over the telephone conversation. In addition, whether the interviewed family physicians had different opinions regarding the existing protocol, 96% of the interviewed physicians answered No, only 4% of the family physicians indicated that they would make a change in the existing Protocol in the field of the hospitalization of the patients. Based on the state standard (Protocol) it was possible to evaluate triage of suspected patients with the definition of COVID-19, management of patients at home, management of patients with chronic diseases, adherence to criteria for hospitalization of patients, rules and performance quality of implementation of emergency notification, role of a physician in the promotion of vaccination and quality of trust of patients towards the family physician.

The main findings of the qualitative research are: Family physicians effectively managed mild to moderate COVID-19 cases; Early diagnosis by family physicians reduced the demand for medical services; Improved management of COVID-19 in patients with chronic conditions such as asthma and diabetes; The importance of timely emergency notifications and the implementation of preventive measures.

## Conclusion

The research results underscore the critical role of the primary healthcare system, particularly family physicians, in managing and preventing epidemics. The findings demonstrate the importance of timely case assessment, coordination with other healthcare services, the implementation of state-standardized protocols for COVID-19 management was essential in ensuring consistent and effective care. These protocols helped family physicians distinguish COVID-19 from other respiratory infections and manage cases appropriately.

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