

Covid-19 emergency management and preparedness in cross-border territories. Collection of experiences, needs and public health strategies in the framework of interreg GESTI.S.CO. project

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Abstract. *Background and aim:* The Covid-19 pandemic highlighted management difficulties in neighboring territories. The aim of the paper is to report the needs of different stakeholders during, before and after Covid-19 emergency with specific regard to challenges faced by public administrators in confined territories. *Methods:* In the framework of Interreg GESTI.S.CO. project the study has been designed with two methodological steps: i) a co-design workshop and ii) a web-based survey. The workshop includes both an audience interaction session and focus groups. Then, starting from the focus group results, the survey has been designed with 30 questions and submitted to the 227 municipalities located between Italy and Switzerland to understand the implementation of Public Health strategies in local emergency planning. *Results:* The interactive session highlighted that most of the critical issues are related to the lack of communication and planning in Public Health policies. The survey highlighted that the local emergency plans rarely integrate a section on health emergencies (30% Italy and 50% Switzerland). Only 20% of the respondents dedicated a section for Covid-19 emergency management. Most of them did not activate initiatives to support mental health. 90% of the municipalities did not cooperate with the neighboring country, but half of them think that it would have been much more useful. The 55% of the Italian respondents are currently updating their emergency plan and will implement it with some Public Health input. *Conclusions:* The study provides insights that can support policy makers in improving their strategy in responding to future pandemic. (www.actabiomedica.it)

Key words: Health emergency management, Covid-19, Public Health, Interreg, cross-border territories, survey, focus group

Introduction

Emergency situations are complex to manage and require an articulated system of responsibilities

especially when dealing with multiple countries, therefore appropriate preparedness tools are fundamental (1).

In particular Public Health Emergency Preparedness (PHEP) has been defined as “the capability of the

public health and health care systems, communities, and individuals, to prevent, protect against, quickly respond to, and recover from health emergencies, particularly those whose scale, timing, or unpredictability threatens to overwhelm routine capabilities (2,3). In January 2020 the World Health Organization (WHO) declared SARS-CoV-2 outbreak as a Public Health Emergency of International Concern (PHEIC) as an extraordinary event that may pose a health threat to other Member States through the spread of a disease and potentially require a coordinated international response. This implies a serious, sudden, unusual or unexpected event; has public health implications beyond the national border of the affected state; and may require immediate international action (4,5).

The adoption of cross-border Public Health measures during the Covid-19 pandemic worldwide sparked significant debate about their effectiveness especially, the number and range of measures used far exceeded previous public health emergencies of international scope (6).

However, the pandemic has shown a lack of clear and international consistent strategies cross-border emergencies.

Healthy urban planning and design strategies represent the vehicles of primary Public Health prevention and promotion (7–9). Instead, during the Covid pandemic, there was a strong gap regarding the actions taken by local governments on the cross-border issues of coordination, management and communication for the promotion of hygienic aspects, health and well-being at the local level, in particular to strategies related to the built environment (10–12). This resulted in management difficulties in neighboring territories even with similar epidemiological and socio-demographic characteristics.

For instance, in the Swiss-Italian border territory, the impossibility of movement between territories during the lockdown made the routine use of cross-border health services impossible, from the simplest daily mobility to the health, primary prevention and Primary Care purposes (13). Furthermore, the closure of customs crossings and the lack of clear guidance on the issues of cross-border vaccinations and swabs have contributed to an increased sense of social exclusion, already present in some marginal territories.

A collaborative approach, from the planning phase to the actual management phase, has to be activated to fight against the emergency to enable a more effective and flexible response (14,15). Indeed, previous actions on cross-border coordination have mainly focused on the emergency/crisis response phase, whereas they should cover every phase of the emergency management cycle and should be further strengthened in the preparedness and hazard mitigation phases (16). New strategic competences also emerge in order to face the complexity of such situations and improve health and wellbeing at territorial scale (17,18).

The management of emergency situations, in the Italian context is carried out by the National Service of Civil Protection, that intervenes and predict any disasters that might occur. While the same role is managed in Switzerland by the Federal Office for Civil Protection. These bodies have to deal with different types of risks, as stated in the Italian Civil Protection Code and in the Swiss Federal Law on Population protection and Civil protection (LPPC; RS 520.1). In Italy, anthropogenic risks category, such as environmental, chemical and nuclear hazards, includes sanitation issues, as reported in the Legislative Decree 2 January 2018, no. 1 Civil Protection Code. art. 16, paragraph 2. On the basis of such decree, Italian Mayors are “local authority of civil protection” and, in addition, as confirmed by the Royal Decree n. 1265 27 July 1934 and Legislative Decree 112/1998 art.117, in these situations, Italian Mayors also represents “the main local health authority” and “the territorial protection authority”. In this frame, when an event cannot be dealt with the means available to the municipality, the mayor can request the intervention of higher levels: the Province, Prefecture, Region and State.

During the Covid-19 Emergency, in synergy with regional health initiatives, Local Authorities initiated and reorganized numerous services and initiatives in their territories to respond to the health and social-health needs of the population, modifying their approaches of intervention. For instance, in Italy, The national Civil Defense Protection Department had the role of coordinating operations, providing relief support, sending field facilities, specialized teams of doctors and nurses, health and basic necessities materials. However, these actions were not completely

planned and defined in advance for a so huge scenario as Covid-19 emergency. Indeed, the main tool used by each municipality to plan and organize activities and procedures to deal with disaster events, The Municipal Emergency Civil Protection Plan “Piano di Emergenza Protezione Civile Comunale”, until Covid-19 Emergency usually does not include aspects related to health or social-health emergencies. Different guidelines have been then adopted, at the National level, the guideline of April 30th 2021 “Indirizzi di predisposizione dei piani di Protezione Civile” [Guidelines for the preparation of Civil Protection plans], while at the Regional level, the Lombardy Region issued the Regional guideline 7th November 2022 - n. XI/7278 approval of “Indirizzi operativi regionali per la redazione e l’aggiornamento dei piani di protezione civile ai diversi livelli territoriali” [Regional operational guidelines for the drafting and updating of civil protection plans at the different territorial levels]; both these new guidelines, now include health issues among risks to be analyzed and to be prepared for.

The last challenges of climate change and health emergencies, in both the prevention phase and during emergencies, lead to new operational guidelines as referred by the Regional Decree n°7278 of 7/11/2022, to support especially local authorities through updating of the Municipal Civil Protection Plan “Piano di Protezione Civile Comunale” with technical and regulatory references related to individual hazards. Thus, the Covid-19 pandemic period highlighted limitations in the management of health-related emergencies by local authorities (19).

In this scenario, the project Interreg aims to support regional and local governments across Europe in relation to management of cross-border emergencies situations. In particular, the “Interreg VI-A Italy-Switzerland 2021-2027 program” represents an opportunity for public and private entities to fund cooperation activities to support people in the cross-border area between Italy and Switzerland from the pandemic effects. The present paper describes the Interreg project “GESTI.S.CO. - GESTIone e coordinamento delle emergenze e delle catastrofi Senza CONfini – [Management and coordination of emergencies and disasters without borders]” related to an area of 2204 km² between the Provinces of Como and

Varese in Italy, and the Canton Ticino in Switzerland, that includes 240 municipalities. The article focuses on the additional WP module MAC (Additional Covid Module) to strengthening the cross-border governance of the two states in relation to health emergencies. The aim of the module MAC is to develop of tools for the revision of local emergency plans and tools for the planning of related territorial social services to citizens. The objective is to develop resilient strategies, flexible operating directions, for the management of social-health emergencies including cross-border emergencies to support local governments to interface with community medicine.

In this regard, the article describes the analysis conducted to verify the initiatives and actions taken by local governments for the management of Covid-19 pandemic. In particular, the aim of the paper is to report the needs of different stakeholders during, before and after Covid-19 emergency with specific regard to challenges faced by public administrators in confined territories.

Methods

In order to analyze the state of the art in relation to the management difficulties that have emerged in cross-border territories during the Covid-19 and the strategies adopted, the study addressed two different methods: i) a co-design workshop and a ii) survey (Figure 1).

- i. The co-design workshop has been organized with two interactive sessions during the kickoff meeting of the 18th October 2021 in the WP3 Covid of the Interreg project GESTI.S.CO, at Politecnico di Milano (Italy). At the event participated 95 referents from local authorities, civil defense and public health experts. First, an audience interaction session has been proposed using a real time survey on-line (Sli.do), where each participant (n=39; response rate: 41%) could provide specific keywords to describe the challenges faced during Covid-19. Then, two hours focus groups have been proposed divided into five target areas: Network

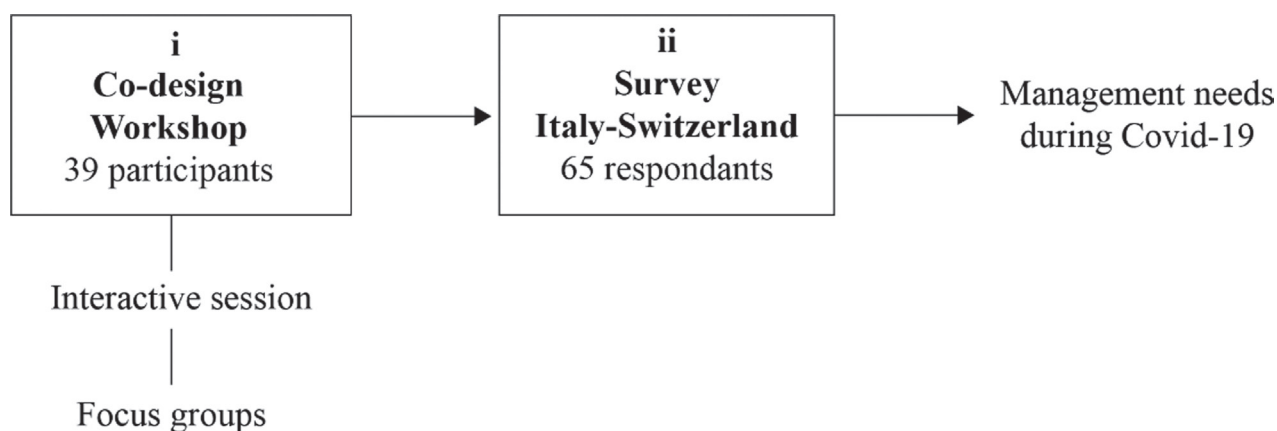


Figure 1. Flow chart of the study's methodology.

of social and healthcare services; Vaccines and massive campaigns; Management of emergencies with health implications; Mental health during pandemic situations; Local governments' first response to the pandemic. Through semi-structured questions, strategies have been gathered and the local experiences are reported in the "results" section.

- ii. Starting from the needs and feedback emerged from the focus group sessions, a web-based survey was designed and sent to the local municipalities based between the province of Como, Varese and Canton Ticino in order to have direct feedback with the actions and initiatives addressed. The web-based survey is resulting an effective tool for collecting significant feedback from a variety of stakeholders related to planning and management during Covid-19 (20). The survey consists of 30 questions, mostly with multiple choice answers, related to the needs that emerged during co-design workshop. The questionnaire was divided into six sections: general character; municipal emergency plans; health emergencies; outbreak of Covid-19; cross-border aspects and future strategies. The web-based survey also collected a series of case studies and best practices implemented by municipal governments, for management of cross-border health emergencies Italy-Switzerland.

The survey has been disseminated via email and reminders have been conducted via phone calls between February and June 2022. The survey was administered to 227 municipalities selected from GESTI.S.CO project area, of which 65 responded (11 in the province of Como (Italy), 22 in Varese (Italy) and 32 in Canton Ticino (Switzerland) with a response rate of 28%. Descriptive statistics have been performed during the data analysis phase and comparison between Italy and Switzerland approaches have been provided.

Results

i) Co-design workshop: interactive session and focus groups

The audience of the kick-off meeting was composed by professionals mainly from the sectors of engineering (26%), architecture (23%) and public health (15%), as well as Disaster Management and Psychology, from institutions and local authorities (i.e. local police, civil protection, Local Health Agency, public administrations).

The interactive session highlighted that most of the critical issues are related to the lack of communication and planning in public health policies, especially at local level, as shown in Figure 2.



Figure 2. Keywords cloud generated from Slido.com with identified improvement strategies for the management of health emergencies. (Figure elaborated through Slido.com).

The **focus groups** provided specific guidelines and reflections that are reported below. Five target areas and development strategies have been identified for local authorities and public health managers.

NETWORK OF SOCIAL AND HEALTHCARE SERVICES

The first focus group hosted the discussion regarding the network of health and social assistance services (21). The participants' heterogeneity allowed a discussion on different levels which led to outputs about criticalities and aspects to improve, in particular:

- past problems are connected to lack of information and guidelines that led to the loss of reference points. The different density of access to services was defined as a further problem in the emergency phase;
- it is important to define guidelines starting from the needs of the territory and to have communication among all the professional figures in the field of social and health services;
- an improvement of the communication to the citizens is needed, to make clearer the competences of each service and to have a structural capillarity that can be supported by mobile structures;
- it is necessary to provide the population a mapping of social welfare and socio-medical services during calm times, to give them complete picture of the references to contact for each category of problem.

MASSIVE VACCINATION CAMPAIGNS

Vaccination hubs set up during the first months of 2021 have to face several logistic issues to manage thousands of people every day (22,23). If on one hand, the internal management proved to be efficient in most hubs, on the other hand, some problems turned up just outside the hub. A lack of psychological support for people waiting for vaccines and the absence of a comfortable site in which people can stay before entering are the common issues that emerged during the discussion. Therefore, good strategies for the future will be a broad sharing of the best practices in managing people at vaccination hubs gained with Covid-19 experience and the strengthening of assistance service for people, especially the psychological one.

MANAGEMENT OF EMERGENCIES WITH HEALTH IMPLICATIONS

In table 3 the discussion focused on the management of different emergencies over the cross-border area, that can have serious impact on the healthcare system. Natural events, or car crashes are just examples of what a punctual event can generate in the surroundings, also in terms of socio-health relapses. When a

disaster occurs, rescue and first aid should be given to the involved people, but at the same time the ordinary use of infrastructures should be guaranteed, since this is a strategic area for European trades. This is an important aspect to be considered during pre-emergency phase, when municipalities define their civil protection plans. It emerged that Italy and Switzerland act in very different way for local planning and there are no common guidelines to be followed. This aspect also emerged during the pandemic crisis when all the difficulties became clear and there was not a good preparation to the event. The goal for the future is to give real and common guidelines to the local authorities to be always ready to face an emergency, through the cooperation of different figures, and through the quick availability of all the useful tools and equipment.

MENTAL HEALTH DURING PANDEMIC SITUATIONS

It emerged from the work of the fourth table that the pandemic had made it necessary to amplify the usual work on mental health, and in part to change the way in which associations - health structures - the local area and the NHS relate. The importance of training and a basic psychological culture was also highlighted, in order to spread wellbeing and mental health. Finally, the role of technology and its integration in situations of fragility was discussed as an aid to psychological support, to reduce the loneliness caused by the pandemic's distancing (24,25).

LOCAL GOVERNMENTS' FIRST RESPONSE TO THE PANDEMIC

Alongside our local health services, the second line to face the impact against the pandemic was managed by the local civil protection services. Its response to such an emergency was characterized by some unprecedented features, summarized by the participants of this session in particular:

- the owner of several operation was not clear showing overlappings between civil protection and the health service competences; more data sharing and communication between civil

- protection and health system will be crucial in the next emergency;
- the lack of shared plans, guidelines or consolidated practices for local civil protections organizations. Human factors and mutual trust between people made it possible to withstand pressure and urgency in the emergency phase but more support and coordination is needed when complex supply chain management must be in place;
 - emerged the fundamental role of internal collaboration between civil protection and the social services sectors along with crucial role of volunteers.

ii) Web-based survey

GENERAL INFORMATION

In relation to the general information, the survey was completed by 33 municipalities for the Italian front (50,8%), and 32 municipalities for the Swiss front (49,2%) guaranteeing a correct representation of both countries and therefore allowing significant data analysis. More than half of the participants (33) are between 46 and 60 years old. The most recurring professional position in the questionnaire was that held by the municipal secretary (n=16; 24,6%), followed by the mayor. Most of the survey respondents work in the

office of the Administrative and General Affairs area (n=26; 49,1%).

PLANNING TOOLS AT LOCAL LEVEL

Municipal emergency plans are necessary for optimal emergency management. In the second section emerged that only three out of 33 municipalities (9%) do not have an emergency plan in Italy meaning that about the totality of Italian municipalities are equipped (91%). On the contrary in Switzerland only 12 out of 32 municipalities have one (37%). Most of them have been adopted from 2020, due to the Covid pandemic, in addition the 23,3% (n=10) of the municipalities updated the plan during the Covid pandemic or after the 2020. The 64,3% of the plans are at local scale (n=27 out of 42), while the rest are interconnected with different municipalities. In Italy 73,3% (22 out of 30) of the municipalities published the emergency plan online, while in Switzerland only the 33,3% (n=4 out of 12 =xx). The most important data in relation to the emergency plan, is that only nine municipalities (30%) out of 30 have a section dedicated to health emergencies in Italy, whereas in Switzerland six (50%) out of 12 municipalities have one (Figure 3).

The survey analyzed the way municipalities managed the health emergencies. The data showed that each municipality collaborates with one or more partners, according to the situation, most of them (n=30; 46,2%)

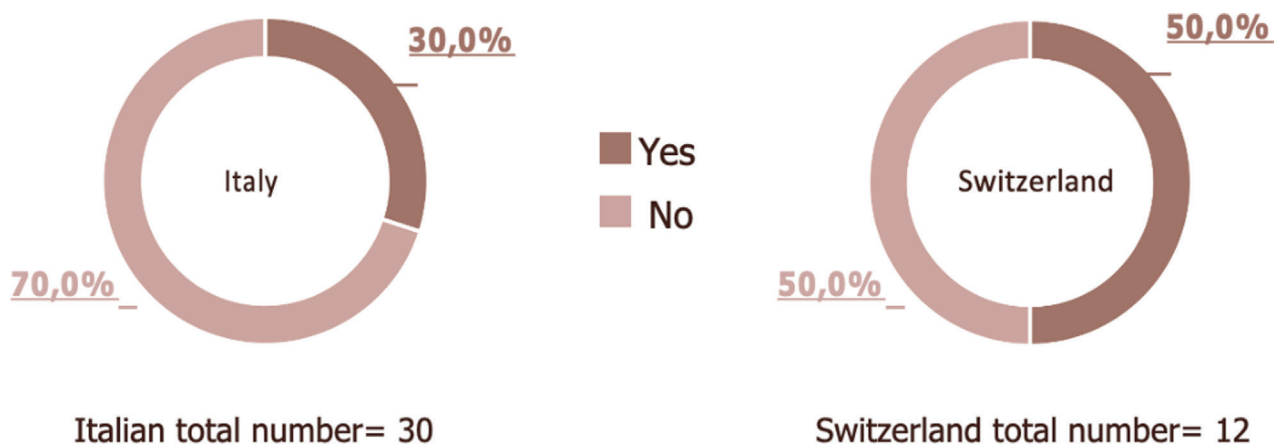


Figure 3. Percentage of respondents with a dedicated Health section within their Emergency Plans. Note: the total number of each Country consider the municipalities that have an emergency plan.

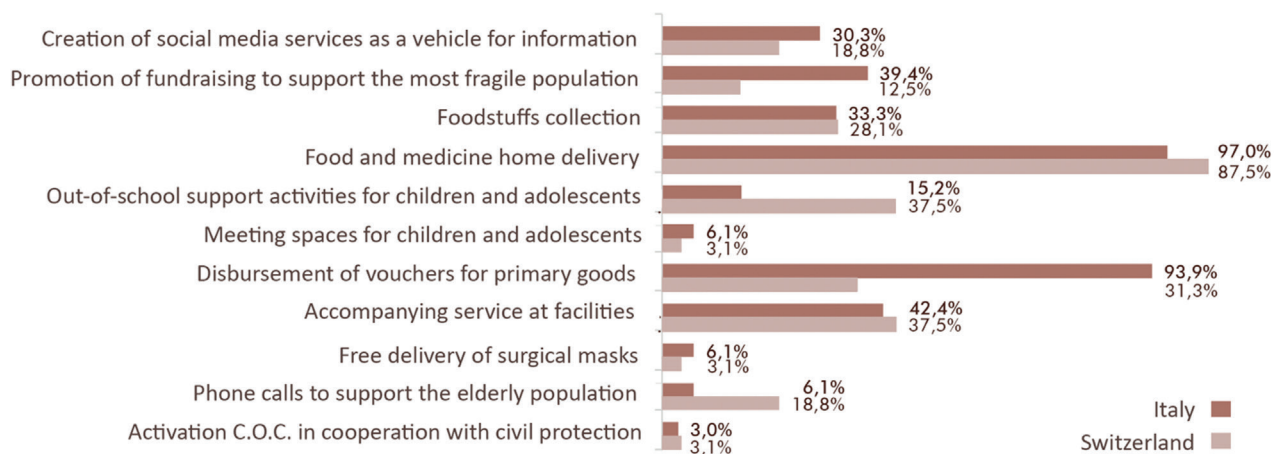


Figure 4. Initiatives activated by the municipalities during the Covid-19 pandemic. Note: the summary of the different items is higher than 100% since the question had multiple choice answer.

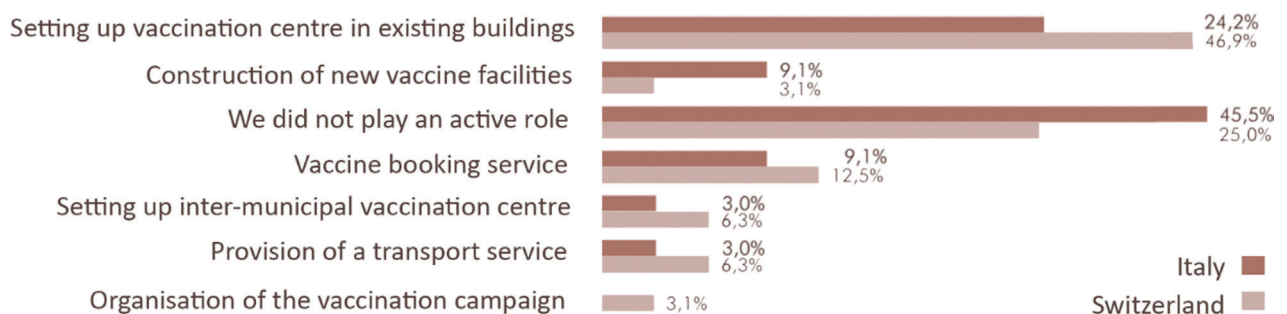


Figure 5. Role of the municipalities during the vaccination campaign. Note: the summary of the different items is higher than 100% since the question had multiple choice answer.

with the Agency for Health Protection (Agenzia per la Tutela della Salute – ATS).

COVID-19 PANDEMIC RESPONSES

In relation to the Covid-19 pandemic, all municipalities that participated in the survey activated at least one initiative to support the fragile population (Figure 4). While, about the role during the vaccination campaign, the diagram (Figure 5) shows that in Italy almost half of the municipalities played no active role. In Switzerland, the largest proportion of municipalities contributed by providing existing facilities in which to set up new vaccination hubs (n=15; 46,9%). Among all the municipalities involved in the survey, only 13 (21,5%) dedicated spaces for emergency management during the pandemic. The most significant aspect

emerged, both for the Italian and the Swiss side, is that most municipalities have not activated any initiatives to support mental health (Figure 6).

CROSS BORDER FEATURES

The section that focuses on the cross-border aspects, considers the border area between the provinces of Como and Varese, in Italy, and the Canton Ticino, in Switzerland. Almost all municipalities (90,8%) do not cooperate and have never cooperated with the neighbouring state in the management of health emergencies. The only relationships were focused on information sharing. Then, 57,6% (n=19) of Italian municipalities and the 53% of Switzerland (n=17), think that the cooperation between states would have been more useful instead of closing the borders,

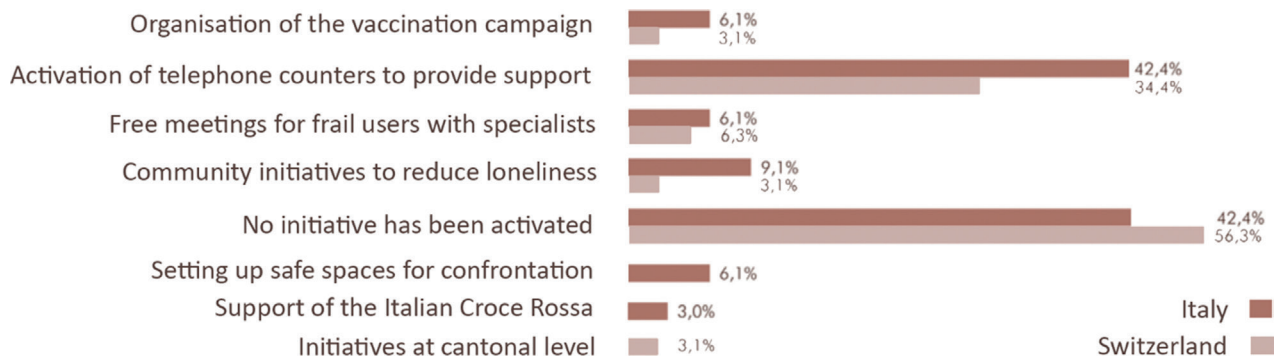


Figure 6. Actions for mental health support during Covid-19 pandemic. Note: the summary of the different items is higher than 100% since the question had multiple choice answer.

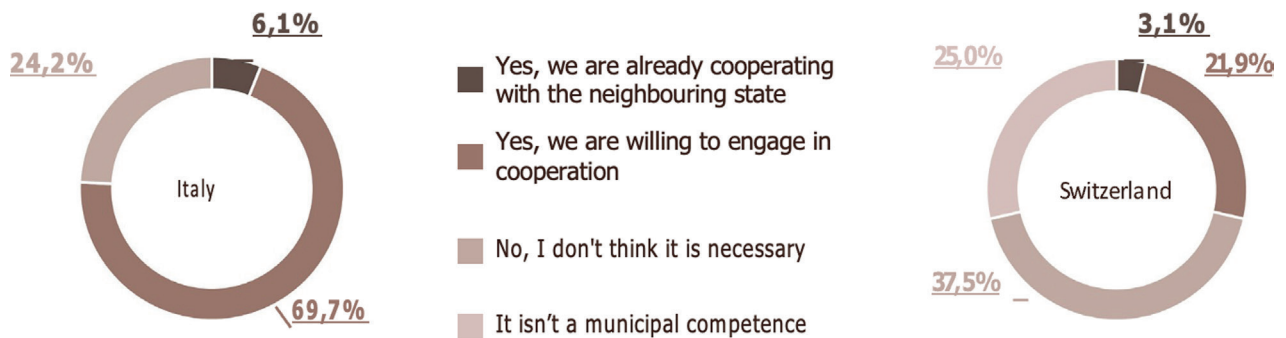


Figure 7. Results to the question about the willingness of the municipalities to cooperate with the cross-border states to manage health and social emergencies.

while almost the 30% of both Italian (33,3%; n=11) and Switzerland (34,4%; n=11) municipalities think that the closure of borders has prevented numerous infections.

FUTURE STRATEGIES

Finally, regarding the future strategies to manage health emergencies situations, more than half of the Italian municipalities (54,6%; n=18) are currently updating (39,4%; n=13) or have recently updated (15,2%; n=5) their emergency plan. In Switzerland, most municipalities do not plan to update in the short term (84,4%). From the result emerged that, in Italy, most of the municipalities consider it fundamental to involve more the citizens in relation to the emergency plan (72,7%; n=24), while, in Switzerland, the population is considered to be sufficiently informed (78,1%; n=25). Interesting to notice, is that a large proportion of Italian

municipalities stated that they would be willing to cooperate with the neighbouring state for the management of health and social emergencies. On the contrary, in Switzerland, many believe that it is not necessary or that it is not up to the municipalities (Figure 7). Finally, most of the services supporting the fragile population activated during the Covid-19 pandemic were suspended following the end of the emergency in 69,2% (n=45) of the municipalities, same for the activated spaces.

CASE STUDIES AND BEST PRACTICES ANALYSIS

The analysis and comparison of case studies and best practices collected in the web-based survey allows to highlight examples useful for local administrations with the aim of tackling new future emergencies. The strategies are reported in relation to the five focus groups' topics.

- In relation to the network of social and health-care services, numerous projects have been implemented with regard to the elderly to enable them to continue living in their own home environment, even in the most marginalized areas, preserving their autonomy without being abandoned (i.e. Welcometech project <http://welcometech.org>). On the other hand, no projects were implemented for children, except for some autonomous initiatives on social networks.
- In relation to the vaccination campaigns, one of the greatest inconveniences was that cross-border citizens had no specific instructions and did not know where to go. In September 2021 the Swiss city of Berne offered to open up vaccinations for cross-border commuters and Swiss citizens living abroad, with the only restriction that the vaccine had to be administered in Switzerland, even in the absence of compulsory health insurance. Another issue was the lack of psychological support for people waiting for the vaccine, that was guaranteed only in one city in the province of Milan through the volunteer Association Sipem. In Switzerland, the initiative “Meglio se Vaccinati - On the Road” was created to reach and convince the majority of the population to get the vaccine. This is a mobile unit that offers everyone over 16 the vaccination without the need to book.
- About the management of emergencies with health implications, cooperation policies have been implemented between states on borders to work together in the event of natural disasters and not. For example, in Switzerland, a village in Canton Ginevra was built where international rescuers can carry out their exercises for operations in areas affected by natural disasters.
- As discussed in the focus group and confirmed from the survey, the pandemic will have long-term effects on mental health. Numerous psychological support services have been activated for anyone who needs them, with telephone lines or hubs where one can physically go to talk to experts. For instance, in Italy, was developed the app “ItaliaTiAscolto” that guarantees to get in touch with a range of professional psychotherapists, available daily and at various times of the day (<http://www.italiatiascolto.it>). While, in Latin Switzerland, the platform “SalutePsi” (<https://www.santepsy.ch>) launched a campaign to inform and raise awareness about mental health through targeted information and various activities on the ground.
- Finally, in relation to the respond to the pandemic, the social services of municipalities supported the most fragile part the population together with the health services, rethinking and reorganizing their services by actively involving the local community. Numerous services and initiatives have been launched, sometimes innovating and strengthening existing experiences. For example, the publication of the collection entitled “Social Services in the Time of the Coronavirus” (26) has as its main purpose to provide the professional community and the public with useful information and insights into good practices and services between territories. The use of digital tools emerges, with the increasing use of social media. The most common initiatives activated by local administrations were the following: activation of telephone counters for psychological support; creation of social media profiles for information; promotion of fundraising; collection of food and medicine home delivery; support activities for children and adolescents; provision of vouchers for basic goods; transport service to social and health facilities; activation of the domestic violence line.

Discussion and conclusions

The study provided a state of the art in relation to the management difficulties that have emerged in cross-border territories during the Covid-19, within Interreg GESTI.S.CO project. Two different methods have been adopted for the analysis and reporting: co-design workshop (interactive session and focus groups), and a web-based survey. This study could lead to some transversal and cross-topic insights that can support policy makers in improving their strategy

in responding to future pandemic (or to future large emergencies involving in a pervasive manner health structures and infrastructures and every-day life of all citizens of a region) or, at least to critically analyze the effectiveness of some of the recent and contemporary approaches.

The interactive session showed that most of the critical issues are related to the lack of communication and planning in public health policies, especially at local level. The same emerged in the focus groups where raised a lack of information that led to the loss of reference points of the healthcare services. The communication was critical both to the citizens and among all the professional figures (e.g. between civil protection and health system). Therefore, it is important to create a network among municipalities and professionals and to share knowledge on services to citizens during calm times. Another important issue emerged in all the analysis, is that municipalities were not prepared to face the crisis. While more planning and forecasting the risks during pre-emergency phase is fundamental, even though guidelines for local authorities. In particular, the survey showed that in most of the civil protections plans the topic of healthcare was not included and the plan has been updated only during or after the Covid emergency. Finally, the survey showed that most municipalities have not activated any initiatives to support mental health, while during the focus groups emerged the need to amplify the usual work on mental health and to spread a more culture on psychological health and wellbeing of people.

The analysis of the study gives insights about the strategies that contributed to local authorities and citizens support to overcome the emergency situation. In particular, about the social and health services, numerous projects have been implemented with regard to the elderly to enable them to continue living in their own home environment. For the vaccination campaigns, the general management of the vaccination campaigns was efficient in most hubs. The internal collaboration between civil protection and the social services sectors was a fundamental asset to assist people. In relation to mental health issues, numerous psychological support services have been activated for anyone who needs them, with telephone lines or hubs where one can physically go to

talk to experts. Finally, numerous services and initiatives have been launched by local administrations as collection of foodstuffs food and medicine home delivery; provision of vouchers for basic goods and transport service to healthcare facilities.

Limitations and future challenges

The limitations of the study are mainly about the number of the participants involved in the co-design workshop activities and the number of municipalities that respond to the survey, that was only disseminated electronically. However, this is related by the specific target of municipalities involved to GESTI.S.CO project, that are in the cross-border areas between Italy and Switzerland. Relevant to understand phenomena in the area, the study has been useful to set our approach. Therefore, further research is expected to expand the number of feedbacks by spreading the research on healthcare emergencies also in other areas. The data collections could be spread also with the collaboration of figures involved in this study, such as Civil Protection volunteers and bodies.

The article shows that municipalities have learnt to act in emergency situations, implementing new initiatives and taking on a new central role. Starting from the actions implemented by local authorities, it is necessary to define in advance strategies for a better planning and management of risks, paying special attention to cross-border governance. Therefore, a possible future opportunity is to propose new resilient strategies from the result of the study, in order to ensure optimal management for future healthcare emergencies. In particular, the topics emerged could be deepened to define design strategies: planning; organization; vaccination; inclusion; coordination (27).

It is fundamental to learn from Covid-19 emergency management experience in order to exploit the knowledge gained during 'calm' times. At the same time, during peace periods, scenarios and intervention models have to be defined to build operative strategies for the emergencies management. To make effective collaboration and support among municipalities, it is necessary to plan in advance governance actions between institutions, to structure a network of

knowledge and establish relationships, as for agreements at national and regional level (28). Therefore, the issues of cross-border health emergency management by local authorities have become imperative with a view to good planning and forecasting of risks that could take place in their territory, and also have significant impacts in the surrounding areas, with important effects in areas located in the neighboring state.

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