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HUNGARIAN RED SLUDGE DISASTER

Crisis Intervention and Aftercare – Proposed Protocols and Feasibility

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This paper intends to describe the Hungarian red sludge disaster and the lessons drawn from three years of psychosocial interventions applied to manage the crisis from immediate aftermath until this day. Conclusions will be discussed in the light of international crisis intervention protocols, with special emphasis on interventions supporting mental health, resilience, and strategies of communication. Our sources include 1. published documents of events, 2. reports and notes of volunteer psychologists, 3. results of two preliminary studies on the impacts of the disaster. As a practical implication of our study, we suggest the redefinition of the Crisis Management System (CMS) in Hungary into a *Complex* Crisis Management System (CCMS) where mental health professionals work in close cooperation with other experts of the interdisciplinary crisis management team, and where continuity is ensured between the different phases of relief work. Generally less emphasised psychosocial consequences of disasters are pointed out and suggestions for a new data collection method are also introduced in this study.

Keywords: disaster, Hungarian red sludge/mud disaster, mental health, Complex Crisis Management System (CCMS), psychosocial interventions, resilience, social capital, disaster communication

Ungarische Rotschlamm-Katastrophe: Krisenmaßnahmen und Nachsorge: Vorgeschlagene Protokolle und deren Durchführbarkeit: Der Beitrag beschreibt Maßnahmen, die unmittelbar ab Ende des Katastrophenereignisses 3 Jahre lang angewendet wurden, um die Rotschlamm-Katastrophe in Ungarn zu bewältigen, und fasst die Erkenntnisse aus der Verwendung der Maßnahmen zusammen. Es wird untersucht, wie internationale Katastrophenmanagement-Protokolle in Ungarn angewendet werden konnten, mit besonderem Schwerpunkt auf Analyse der Interventionen, die die psychische Gesundheit wiederherstellen und die Resilienz unterstützen sowie auf

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der wichtigen Rolle der entsprechenden Kommunikation. Die Studie baut auf Folgendem auf: 1. schriftliche Dokumentationen der Katastrophe und der Interventionen 2. Berichte und Aufzeichnungen beruflicher Freiwilligen 3. Ergebnisse von zwei Vorstudien zu den Auswirkungen der Katastrophe. Der Beitrag präsentiert Vorschläge für die Neudefinition des Crisis Management Systems (CMS) als Complexes Crisis Management System (CCMS), in dem die Vertreter des Fachgebietes für psychische Gesundheit in enger Zusammenarbeit mit den Vertretern anderer Fachgebiete tätig sind, und in dem auch die einzelnen Phasen der Krisenbehandlung miteinander in enger Verbindung stehen. Ferner weisen wir auf einige weniger hervorgehobene psychosoziale Folgen von Katastrophen hin und schlagen zur Sammlung der Daten der Opfer eine neue Methode vor.

Schlüsselbegriffe: Katastrophe, Ungarische Rotschlamm-Katastrophe, psychische Gesundheit, Complexes Crisis Management System (CCMS), psychosoziale Intervention, Resilienz, soziales Kapital, Katastrophenkommunikation

1. Introduction

In this paper we will discuss the red sludge disaster that affected three towns[1] in Hungary in 2010. The red sludge disaster was an unexpected industrial catastrophe that carried many characteristics of natural flood disasters. Due to these hybrid characteristics it stands as a good example to illuminate critical issues and difficulties about psychosocial crisis intervention processes. The lessons drawn from our experiences in the aftermath of the disaster might serve as valuable knowledge for future best practices.

The three-year process will be discussed from immediate crisis intervention to short-term interventions and long-term aftercare. Results, dilemmas, strengths and weaknesses of this process will be illuminated in the light of internationally accepted crisis intervention protocols, with special focus on mental health, resilience, and communication.

First, events of the disaster and the course of interventions will be described along with their mental health implications. Then key concepts will be highlighted concerning the circumstances enhancing and weakening the efficiency of crisis intervention, similarly to GILBERT (2005).

Finally, proposals will be made to extend the Crisis Management System (CMS) into a Complex CMS (CCMS), in accordance with the concept of Integrated Disaster Risk Management (IDRiM) proposed by WISNER (2011).

Our sources included documents published regarding the events (from local websites, newspapers, national media, crisis intervention reports and articles), personal experiences of experts involved (team discussions, notes), and preliminary research results.

[1] Kolontár, Devecser, Somlóvásárhely.

2. The disaster event and victims

2.1. The red sludge disaster

On 4 October 2010, the wall of a giant reservoir of an alumina factory collapsed near Ajka, Hungary. The reservoir contained the caustic by-product of aluminium production (the so-called red sludge). Approximately one million cubic meters of red sludge – diluted by recent heavy rainfalls – flooded three nearby settlements and approximately 40 square kilometres of land. Some components of the mud were seriously hazardous. It polluted the ecosystem, caused chemical burns on humans and animals, and there were incidences of upper respiratory catarrh due to inhalation of the fine fugitive dust of the desiccated mud.

The outburst was unanticipated and sudden, leaving no chance for preventive evacuation. In addition, neither the locals nor the first responders had appropriate information about the hazardous qualities of the material. This lack of information resulted in confusion that had a negative effect on the first attempts of interventions.

2.2. Victims, injuries, damages, and stress

The red sludge flooded three settlements[2] and the surrounding arable lands. 718 people were permanently evacuated. There were serious casualties: 10 people died, 286 required medical attention, and 120 people were hospitalised (HAJAS 2011).[3] Some first responders were also injured as initially they did not wear appropriate protective gear due to the mixed messages about the hazardous nature of the sludge.

Several residential buildings, public properties, industrial and commercial establishments were ruined. A total of 364 properties had become uninhabitable or needed reconstruction. 810 hectares of agricultural land were covered with sludge (VÁGFÖLDI 2011).

A few days after the flood there was a risk of another dam breakage, thus evacuation preparedness in the three effected settlements had been ordered. Thousands of people were alerted to pack a maximum of 20 kgs of luggage and then kept waiting for three days for the order to leave their homes. Fortunately, this turned out to be a false alarm, no subsequent dam failure occurred and no further evacuation was needed.

The catastrophe caused an extreme amount of stress and mental health risks to the primary and secondary victims.[4] The lack of control, the sense of helplessness

[2] According to the official statistical data of the year 2010, Devecser had a population of 4806 people, Kolontár 804, Somlóvásárhely 1121.

[3] Data is taken from the 2011 Annual Report of the Parliamentary Commissioner of Civil Rights.

[4] The literature distinguishes victims of disasters from primary to the fifth level. We only use the terms primary and secondary victims in this study. By *primary victims*, we mean those who were directly affected by the disaster (who needed to be rescued and/or required medical attention, and who have received life-threatening,

along with the life-threatening situation, physical injuries, sudden losses, and mixed messages about the hazardous nature of the mud enhanced the mental health vulnerability of the victims.

The evacuation itself was an extra source of stress. Being displaced is a psychologically strenuous situation for everyone. In rural areas of Hungary it is even more so, since people are traditionally not mobile (CSATH 2008).[5] Families live in their own houses for generations and they find it hard to make a change even for the sake of a better job. So having to leave their homes caused severe identity crises in several cases.

For some families that lived through World War II, simply the word 'evacuation' revived the trauma or the transgenerational trauma. GOODMAN and WEST-OLATUNJI (2008) raise important points about the treatment of a revived trauma with the focus on resilience vs. trauma even in the psychosocial aftercare of disaster survivors.

An additional source of stress was that many victims were employed by the factory responsible for the disaster. They experienced not only the loss of their homes, but also the threat of losing their jobs and even some feelings of guilt.

There was a very high percentage of Roma population among the victims. The largest was in Devecser, where the Roma population lived in a relatively segregated, specific sub-cultural milieu that was entirely demolished by the sludge. Due to the disaster they not only lost their homes but also their special local social environment. The cultural matrix of the settlement has changed: people from different subcultures became companions in distress. The involuntary cohabitation of different ethnic groups seemed like a positive social outcome in the beginning, but turned out to be an intense source of social conflicts.

2.3. The legal and social policy context of the disaster and its effects on well-being

The factory in Ajka (Ajkai Timföldgyár) was founded in 1942, and was under state ownership until the change of the political-economic regime in Hungary in 1989. The current owners purchased the plant in 1995. The factory was placed under state supervision after the disaster, and their previous technology was replaced with a safer one. In 2013 their profile was narrowed, and the company was put under state ownership.

The red sludge catastrophe was an industrial disaster most probably caused by human carelessness or misconduct. The lawsuit against the owners is still under procedure.

potentially traumatic stimuli; DE SOIR 2006, 122). By *secondary victims* we mean those who were not directly affected by the disaster but who are close relatives, friends, or rescuers of primary victims, or witnesses of this horrific event.

[5] By CSATH's conclusion, place attachment can be an advantage in trauma-free period, but forced relocation has traumatic consequences.

As the interpretation of responsibility plays a crucial role in the cognitive-emotional processing of a traumatic event (LOEY et al. 2008), initiating the process of determining liability was a very important move. However, it created an additional ongoing source of stress for the victims.

Lastly, one more factor increased the sources of stress the locals have experienced, as the disaster happened in an intense, politically heated context, since municipal elections were held in Hungary the day before. As a result, attitudes towards the crisis intervention actions of the state and the municipality were somewhat influenced by political overtones.

3. Interventions applied to manage consequences of the red sludge disaster

The psychosocial interventions will be presented in chronological order.

1. Immediate and short-term interventions (the first 4 months)
2. Long-term interventions in two stages (from the 5th month until today):
   2.1. Restoration of the flooded territories, and providing permanent accommodation (February 2011 to January 2012)
   2.2. Restoration and consolidation of normal daily life in town (from January 2012 to October 2013)

3.1. Immediate and short-term interventions

3.1.1. State intervention

First responders arrived 8 minutes after the disaster happened and started rescue operations 14 minutes after the first emergency call with 106 first responders, later accompanied by approximately 100 paramedics and 500 soldiers and policemen. 8 victims were transported to the hospital by helicopters (HAJAS 2011; VÁGFÖLDI 2011). From the morning of 5 October rescue and relief work was managed by the operative staff installed on site.

In Hungary the National Directorate General for Disaster Management, Ministry of Interior (NDGDM) is the competent government body in time of disasters. In extreme situations, a Governmental Coordinating Committee (GCC) takes over leadership. They assigned a Scientific Council, delegated by the Hungarian Academy of Sciences (HAS). The Scientific Council consisted of specialised professional responsible for the coordination of specific tasks in their field (e.g. measurement of environmental and health consequences, determination and planning of appropriate interventions). Their work was also supported by international organisations and committees such as EU, WHO ROE17, Greenpeace.

The GCC deputed an Operational Group to the disaster area to carry out rescue

operations, organise and control protection activities, direct the work of the local municipalities, and control official communication with national and international media.

The NDGDM's Crisis Intervention Team (CIT) that consisted of well-trained and skilled psychologists was also put into action immediately. The CIT's work corresponded to protocols of psychosocial support for the first phase of crisis intervention for both victims and interveners (IASC 2010; TENTS: The European Network for Traumatic Stress 2008; EUTOPA 2008, etc.). They assisted rescue operations and evacuations in the first 72 hours.

One month later, the mission of the Operational Group was changed by the Centre for Reconstruction. The new tasks included the coordination of the removal of the toxic sludge, demolition of damaged houses, and the first steps of reconstruction.

From a psychosocial perspective, the state interventions in the first month were carried out in line with international protocols by the hierarchically constructed CMS. Everything was done with unprecedented speed and efficiency, mobilising enormous financial and professional forces.

However, communicating information to the public was less efficient. Official announcements in the media did not report important actions and reflected insufficiently on the numerous false news from arbitrary sources that were circulating in the public, often creating panic. Disseminating relevant and clear information is an important pillar of crisis management and resilience promotion (Longstaff & Yang 2008; Comfort 2007; Norris et al. 2008; Nicholls & Healy 2008; Ahmad 2012).

3.1.2. Activity of the municipalities

As mentioned above, the majors of the three affected municipalities had been elected just the day before the disaster occurred. They were new to leadership and in particular to managing such situations. Thus the centralised GCC control on disaster intervention activities was of great importance. The main role of the municipalities was mediation between first responders, their own institutions, the locals, and helpers arriving to the site. They have done heroic work without guidelines or relevant experience. This resulted in an extraordinary burden and numerous conflicts, caused mainly by the shortcomings of communication on all levels.

3.1.3. The reaction of the local population

The flood hit the local population unexpectedly. Fortunately, as it happened during the day, most people were away and those who were home could warn others when they saw the flood coming. As they were not aware of the hazardous nature of the red mud, the majority did not escape, but tried to rescue their livestock and their belongings.

After the danger became obvious (people noticed burns and wounds caused by the mud), everyone did their best to rescue those who could not escape on their own. Victims welcomed help from official rescue units, charities, and volunteers arriving from all over the county, but they were also very resourceful in helping themselves.

In the first days after the flood stopped, enormous efforts were put into removing the sludge from their houses and gardens. This 'heroic' phase characterised by self-help and altruism ended when it became obvious that the flooded houses had to be demolished. Victims were shocked when they realised that their work was in vain, and that it was impossible to save their homes. Psychologically this realisation was debilitating even for those who seemed to function well up to this point.

Their discomfort was made even worse by the fact that the future of the settlements was decided by the state instead of a mutual agreement. Even though the accepted plans were reasonable, the locals felt that they had lost control over their own future since their opinions were not considered in the decision-making process. This dissatisfaction could have been lessened by a well-designed communication strategy.

3.1.4. State compensation and civil donations

In the wake of the disaster, donations were offered from all over the country and even from abroad. To manage the incoming donations, a Hungarian Remediation Fund was established by the state. Thus the utilisation of the donations was also placed under central governmental control. Local municipalities and charitable organisations (e.g. Hungarian Maltese Charity Service, HIA-Hungary, Caritas, Hungarian Red Cross, etc.) carried out the operational work.

Temporary housing as one of the most important basic needs of victims was provided by the Remediation Fund and managed adequately by the Hungarian Maltese Charity Service.

All donations however that did not go through the Hungarian Remediation Fund were received, stored, and distributed in a rather chaotic manner. Donations arrived in a confusingly excessive, occasionally even wasteful amount, especially when it came to food. The majority of donations were offered to different charities and church organisations, or specifically to the local municipalities, schools, nurseries, to the local parish or to certain families portrayed in media, bypassing central control. An example of the unorganised charity actions was that on 6 December, seven different Santas arrived at the local public school to give presents and donations to the children.

The first phase was characterised by excess rather than the lack of goods. The chaotic distribution of donations resulted in multiple redundancies, such as some families receiving two washing machines or televisions and others receiving none. A lack of trust towards the dividers of the donations was experienced that weakened social cohesion and generated envy and rivalry between people.

3.1.5. Assessment of damages, compensation

Official damage compensation is a complicated and long process. The different forms of state subsidy, insurance, compensation from those responsible for the damage, and charitable donations should be dealt with in a common framework, also taking individual needs into account, as it has been shown by SUGARMAN (2006). Since each situation is very different and has particular characteristics, there is no exact protocol to follow on how to handle different forms of compensation; however, these processes should be organised and followed up in a clear way. The importance of transparency and efficient communication regarding the process should also be emphasised. In our case, as mentioned before, communication was unfortunately one of the weaknesses of crisis management.

The assessment of damages created conflicts between the locals and the authorities in several cases. Psychologist volunteers initiated conflict resolution by mediation which seems to be a promising technique within psychosocial aftercare.

The Hungarian government decided to build new residential housing in a new area for the victims in each effected settlement. The families had to come to a decision very quickly whether they preferred to receive a house in the new residential area in the estimated value of their perished home or they preferred to receive funds to buy or to build housing anywhere else.

Damage assessment negotiations and the forced, accelerated decision concerning their future place of living were perceived as severely stressful by the victims.

3.1.6. Activity of volunteers

Everybody wanted to help. Volunteers arrived from all around the country and even from abroad to do the best they could in response to the disaster. In the first few months, the number of volunteers assisting rescue workers and humanitarian aid workers was between 600 and 1000 daily.[6]

All charity and religious organisations from Hungary represented themselves, and numerous civilians rushed to the site and offered their help. A good example was an amateur radio team which volunteered to create a radio broadcast to help disseminate information (HARGITAI 2011). Their idea was important as appropriate use of different forms of media and social media could be an asset in building resilience after disasters (DUFTY 2012).

It was rather unfortunate though that there was no structure or protocol on how to involve the activities of volunteers in crisis management, thus the organisations had to come up with ad hoc solutions. As a conclusion, it should be noted that guide-

[6] Bartal, A.M. & Z. Ferencz, *A vörösiszap-katasztrófa komplex társadalmi hatásvizsgálata Devecser, Kolontár és Somlóvásárhely településeken* (Veresegyház: Monitor Társadalomkutató Intézet, 2013; unpublished study).

lines for the involvement of civil activists in emergency situations should be developed or adopted from international practices (such as JONG & HOITING 2011).

3.1.7. Physical support from volunteers

The coordination, management, and assignment of volunteers was rather chaotic and incidental in the first phase. Some charitable organisations were the only exception. Their work was well organised and controlled. (For example, the Maltese Charity Service arrived with a group of well-trained social workers, and they cooperated with catastrophe psychologists.)

Catering, acquisition, and allocation of necessary protective equipment (e.g. masks, wellingtons, and clothing) was done mainly with the collaboration of charitable organisations and local churches. Unfortunately, there was a lack of communication regarding the division of labour among these services.

Finally, the volunteers arrived with various underlying motives and attitudes. While some of them were driven by true altruistic motivations, others were there mainly out of curiosity or to have 'fun'. Consequently, sometimes tension was released among the volunteers in the form of rivalry and authoritarianism that made it even harder to coordinate their efforts.

3.1.8. Psychosocial professional volunteers

In the first week after the disaster, psychosocial help was provided by volunteers with various backgrounds, including psychology, mental health, and religion. While the members of the official Crisis Intervention Team (CIT) had appropriate training, some of the psychosocial volunteers were less prepared for emergency situations.

Most of the psychologist volunteers joined one of the charitable organisations (e.g. Hungarian Maltese Charity Service, Helper Association), but some acted on their own behalf without contacting the organisations. Their action resulted in confusion as some families were visited multiple times, by multiple helpers who did not coordinate with each other. To eliminate this anomaly, the GCC and the Scientific Committee appointed a psychologist (who undertook the assignment as a volunteer) to coordinate ongoing local psychological work and make sure that everything was being done in an organised way, and according to professional international protocols as much as possible (e.g. screening, brief counselling, psychoeducation/information, special attention on vulnerable groups: children, older people, etc.). Unfortunately her mandate was to organise the work of psychologists only, without authority to coordinate with other members of the CMS, thus psychological support was not incorporated into the crisis management.

Evacuated families were visited by psychologist volunteers. They conducted a screening, a short interview, and gave ratings according to the state and the demands

of the victim. This sometimes meant one consultation; in slightly more serious cases 3 or 4 sessions; while the most severe cases were directed to clinics.

Furthermore, groups were organised by psychologist volunteers, including playback performances for the highly traumatised elderly and the most burdened rescue teams of the municipalities, and relaxation groups for victims. The volunteers worked in teams and held peer supervision and case discussions on a regular basis.

Their work required flexibility and a quick assessment of resources as circumstances were rather challenging. It was advisable not to state their profession as the common attitude in Hungary is that only 'crazy' people need to see psychologists.

In addition, neither the central and the local government nor the charities were aware of the fact that psychologists may contribute not only on a clinical but also on other mental and behavioural levels of intervention (e.g. psychoeducation, mediation, coaching, organisation development, community development, interventions promoting resilience, etc.).

In our experience, the Hungarian protocol for disaster management – except for the first 72 hours of the disaster managed by the CIT – did not include direct interventions to improve the psychological well-being of the victims. Also, the Middle-level Crisis Management team did not include an officially delegated psychologist staff member who could have initiated more thorough courses of psychological interventions.

3.1.9. Activities of spiritual volunteers – priests and pastors

The majority of the population living in the disaster-affected area is Roman Catholic. The local priest engaged himself in crisis management from the beginning very actively but in a rather autocratic form – in some cases without coordinating with the municipality. Another Catholic priest, trained in emergency pastoral help specifically in disaster crises, also volunteered his services, but unfortunately he had no license to give advice to the local priest or to officially engage with the municipality and disaster management units. Thus he restricted himself to direct work with the victims, organised the work of civil and church volunteers, and managed the operation of the three crisis phone lines at the church. He emphasised the importance of visiting victims in pairs, exchanging experiences in groups organised by the church, and he also promoted joint prayers (Fodor 2013).

Pastoral helpers experienced that some Christian victims were unable to reconcile their faith and what happened to them. Grief and anger mingled with shame and a guilty conscience. They had a hard time dealing with negative personal consequences of the difficult situation such as selfishness, greed, envy, loss of power, competition, and the 'who helps more and in a better way' type of approach. These phenomena were also described by others (e.g. Ladenhauf & Liesenhart 2011; Worthington 1998). The well-trained priest volunteer was prepared for the emer-

gence of these dynamics and he managed to handle them adequately; however, he reported frustration over the lack of relevant experience among the volunteers.

Ultimately, everyone had to face the fact that there is no framework for the cooperation between different agencies supporting mental health in Hungarian crisis management. Neither the different churches nor charity services, NGOs, nor the psychologist volunteers were officially coordinating with each other regarding their activities. Some charities even directly refused to cooperate.

3.1.10. Challenges for psychosocial work in crisis

Volunteers from various disciplines (e.g. ethnography, architecture, cultural anthropology, sociology) and representatives of various media interviewed the victims. As far as we know, no one checked systematically the effects of these series of interviews on victims (for example in terms of post-traumatic symptoms).

Concurring with SEELEY (2008), we suggest that the effects of unprofessional intervention be recorded in the literature of crisis intervention (e.g. prevention of PTSD) and professional protocols regarding psychosocial help.

Another challenge was, as mentioned above, that even today the concept of psychological counselling is unclear to many people in Hungary. It is primarily regarded as a profession dealing with people who are 'not normal', therefore seeking mental help is considered highly stigmatising. In some cases help was refused by traumatised people mainly because of the fact that the helper was a psychologist. Furthermore, if services were offered as 'psychological assistance' some practising Christians refused them, as they only accepted spiritual guidance from their church. This confirmed our belief that psychologists need to cooperate not only with charitable organisations but with ecclesiastical helpers engaged in disaster pastoral duties. As described above, cooperation was unfortunately very limited, and mental heath professionals were not represented in the CMS.

Lastly, the centralised crisis management created a rather paternalistic atmosphere. Ács[7] found supporting evidence for this attitude by analysing all manner of media coverage of the red mud catastrophe. Even though the majority of the victims showed great courage and resilience, mid-level CMS management did not rely on the competencies of the affected and did not support resilience-building initiatives suggested by psychologists. The victims did not have the chance to regain control over their lives by these forced interventions, regardless of the fact that the notion of competence and sense of control are factors strongly promoting resilience (MASTEN & OBRADOVIC 2006; FERNANDO 2005).

[7] Ács, É. 'Hiedelmek a devecseri katasztrófával kapcsolatban', Presentation at the 20th Anniversary Conference of Magyar Tranzakcióanalitikus Egyesület (HATA) and in Honour of Eric Berne's Centenary (Budapest, 17 Sep 2011).

3.2. Conditions which enhanced and impaired efficiency of crisis intervention

3.2.1. Supporting conditions

– The government considered the relief work high priority. They reacted immediately, despite the unexpected and unpredictable nature of the event, and provided financial and professional support that had a positive effect on the victims. Strong central control was appropriate in this phase, even though bureaucratic management sometimes rendered operative work more difficult (VÁGFÖLDI 2011).
– The majority of affected population seemed resilient, demonstrated the ability to take care of themselves, and acted in an altruistic manner, helping others.
– Proper mental health interventions were carried out professionally by the CIT in the acute phase and by the organised group of psychologist volunteers in cooperation with the Hungarian Maltese Charity Service in the short-term phase.
– Help from all sides – the numerous volunteers and donations – improved the well-being of victims and raised their resilience despite the disorganised manner in which the help was given.

3.2.2. Conditions impairing efficiency

– The disaster happened very unexpectedly, experts, management, and local people were unprepared.
– Besides the life-threatening situation, sense of helplessness, and uncertainty, the evacuation caused an additional source of stress.
– The crisis work of municipalities was under central governmental control, thus some important decisions could not be made independently and time-effectively.
– The strong central governance along with the paternalistic attitude left little control over the events for the victims which made coping and finding resources for resilience even more challenging. It also created mistrust towards the administration.
– Different ownership and insurance conditions and the anomalies around the distribution of donations made the compensation a burdensome process for the affected.
– The CMS had no strategy for crisis communication and the communication techniques of mid-level managers were not effective.
– There was no appropriate protocol to coordinate and regulate the work of volunteers.
– Psychologist volunteers and pastoral helpers did not have a defined role in the mid-level CMS so their tasks and relation to the other organisations were unclear, and they were unable to properly assert their professional suggestions for interventions.

– In different phases of the relief work, psychosocial interventions were carried out by different helpers and organisations. There was no proper documentation to make sure that experts could rely on and continue each other's work.

4. Long-term interventions

4.1. Restoration of the flooded areas and solution for permanent housing

4.1.1. Measures taken by the state and the municipalities

The main focus of the restoration in 2011 was to clean the flooded territories from red sludge, demolish the destroyed houses, and construct the new residential area. These works were conducted with high intensity.

Each victim received permanent housing within a year after the catastrophe. The new residential homes were designed by a renowned architect's team. They were built according to very high standards both aesthetically and functionally.

Serious efforts were put into the restoration of 'normal' daily life by the local municipalities. Urban and economic development plans were made; buildings of public institutions (post office, police department) were reinstalled, agriculture was resumed. With the help of volunteers and donations community facilities (playgrounds, sport fields) were reconstructed. A grand memorial park was also established on the site of the demolished houses.

Health screening stations were placed in the towns for six months to monitor the harmful physical impacts of the red sludge. Unfortunately, there was no screening for mental or psychosomatic consequences at these stations.

The municipalities, in association with charitable organisations, organised several events (concerts, dog shows, and fishing competitions) in order to cheer up the locals, since disillusionment and bad morale in general was very common among the population. However, these events did not serve real interests and were held with very little attendance. Mental health professionals proposed activities initiated by the members of the community instead of the ones organised from the outside, but the municipality did not consider their suggestions, regardless of the fact that their methods were proven to be effective in promoting community resilience (Landau & Saul 2004; Landau 2010). It is important to highlight again that if mid-level CMS had had mental health professionals in the management, psychosocial considerations could have been represented more strongly.

4.1.2. Mental health of the local population

'We own a nice house, but we do not have a home,' some people said after moving into the new residential area which was far from the old town centre. Many who initially chose to live there regretted their decisions. Residents of the new neighbourhood withdrew to their homes, and started their new lives rather isolated. Social cohesion loosened dramatically.

Others chose to buy properties in the old part of their settlement that was not impaired by the disaster, or moved out of town. The ones who moved away, wherever they went, felt the move was forced on them and experienced a loss of their identity on multiple levels. They lost their sense of home and also their place and community identity. This phenomena is known from disaster literature (Manzo & Perkins 2006). Important relationships broken up by distance evoked depression for some people, or even a sense of guilt for their choice to move out of town.

Some of the elderly experienced disorientation, anxiety, and irritability. In some cases elderly people got lost and wanted to return to their already demolished homes.

Furthermore, several conflicts emerged because of the fact that the Roma minority people who used to live in one neighbourhood were now scattered throughout the whole town. They had conflicts with their new neighbours as they had difficulties adapting to the new environment.

Last but not least, secondary victims claimed that there was too much attention on the primary victims, the disaster and the remembrance. They began to feel less compassion and more envy for the primary victims.

The psychosocial well-being of the community had dramatically decreased, and mid-level CMS leadership had no concept to improve the situation. They neither supported nor rejected the interventions suggested by the psychologists to promote resilience, but neither did they allocate funds for mental health services. A temporary solution was provided by the Maltese Charity Service as they hired one full-time psychologist to provide services for the region. Additionally, the local school hired a part-time school psychologist funded by an American NGO.

Local spiritual leaders tried to improve mental health by encouraging followers to rejoin services. They chose to read psalms that emphasised the beauties of the world and the essential meaning of life, organised a prayer group for children, and gave blessings on the new houses and public institutions.

4.1.3. Activity of volunteers

Even in this later phase there were several volunteers helping with the reconstruction. For example, architecture students helped in building the new sports field and playgrounds.

Mental health counselling was still provided by volunteer psychologists as there were no local institutions where patients could have been referred to. Psychologist

volunteers treated some individual clients and provided group services that the one expert hired by the Maltese Charity had no capacity to do. They facilitated activities that strengthened the community, and promoted community resilience. Film screenings, discussions about the past and the future, and Playback Theatre were organised.

4.2. Consolidation of life in the altered settlements

4.2.1. Measures taken by the state and the municipalities

In 2012, the main goals of decision-makers were urban development and the creation of new jobs. Although these priorities are considered to be reasonable in this phase, they were often criticised by the locals. We believe that the reason for their dissatisfaction was the lack of appropriate communication of these goals by the CMS. The long-term central concept, plans, and framework of funding was not clear to the victims which resulted in bad morale and accusations of corruption. Central control was not welcomed by the victims. Mistrust, anger, and helplessness were common as well as some psychosomatic symptoms such as headaches and fatigue. According to Parsons (2002), these phenomena are common risk factors in post-disaster settings. Psychology experts tried to draw the attention of decision-makers to the importance of social cohesion (Wind et al. 2011) and psychological well-being. Unfortunately, their predictions were not taken into consideration as they were not included in the CMS consult team.

4.3. Conditions which enhanced and impaired efficiency of crisis intervention in the restoration phase

4.3.1. Supporting conditions

– Reconstructions with central governmental control were fast and efficient.
– The goals of restoration were reasonable.
– Psychosocial services were continuously provided by charitable organisations and volunteer experts.

4.3.2. Conditions impairing efficiency

– Information about the goals of reconstruction was not well communicated, so people perceived even reasonable decisions as forced and not in their best interest.
– Central governmental control coupled with a paternalistic attitude fostered resistance and bad morale, and weakened social cohesion and community resilience.

– There was no central concept or intervention in the CMS to improve the morale and mental health of the victims. Except for a few ad hoc attempts, they did nothing to improve psychological services.
– Weakened social cohesion affected the whole community on a psychosocial, physical, and economical level that may even affect economic development adversely (as shown by EASTERLY et al. 2006).

5. Research studies, ethical considerations, and professional dilemmas after the disaster

From both a scientific and a practical perspective it is undoubtedly essential to research the consequences and impacts of disasters. However, these studies may be professionally and ethically challenging. What should be researched, when, where, how, and by whom? What is the right method to conduct a study in order to gain the most knowledge, but not to do extra harm or intervene with treatments?

5.1. Difficulties of assessment of overall condition

The Hungarian CMS does not include any inventories or assessments as part of the standard operating procedure after disasters, even though international protocols (BERING et al. 2008; World Health Organization & King's College London 2011; HOIJTINK et al. 2011) propose the use of such methods.

5.2. Research studies on consequences of the red sludge disaster

There were several studies with several methods conducted by experts of different disciplines such as ethnography, sociology, psychiatry, psychology, etc. (LEVY-GIGI & KÉRI 2012).[8]

The first studies on the psychological impacts of the red sludge flood were to explore the attitudes of the media and the unaffected Hungarian population towards the red sludge disaster. Ács[9] found that a paternalistic attitude was present in the media towards the victims. PÉK and his colleagues (2011) analysed the process of how this traumatic event was memorialised by unaffected people.

There were also two studies conducted by some of the psychology volunteers

[8] Cf. Á. Hajdu & T. Korzenszky 'Árral szemben', Presentation at the 'Falu a MAban' Conference (Budapest, 2 March 2012); A. V.Komlósi, J. Magyar, D. Milanovich, D. Szemán & V. Lux, 'A katasztrófát követő utógondozás hatékonyságát támogató és nehezítő körülmények', Presentation at the MPT General Assembly (Budapest, 25–27 May 2011); and see Bartal & Ferencz in note 6 above.

[9] Cf. note 7 above.

working on site. Some results of these studies will be presented here, to illustrate and support the facts we have mentioned above.

5.2.1. Assessment within four months after the catastrophe

Data were collected by psychologist volunteers who were supposed to fill out a data sheet after each family visit. The form included questions about the physical, socio-economical, and an emotional status, previous traumas, and perceived coping mechanisms of the victims. Due to time constraints, not every volunteer filled out these data sheets, thus only data collected from 60 victims were available for the study. Results were presented at a Hungarian conference by V. Komlósi and her colleagues.[10] There were two significant results within the sample of 60 participants. A strong moderate correlation was experienced between traumas in the past and the feeling of hopelessness ($rS = 0.532$; $p = 0.001$). In addition, there was a moderate correlation between age and the feeling of uncertainty ($rS = 0.326$; $p < 0.05$) and the negative feelings evoked by the catastrophe ($rS = 0.326$; $p < 0.05$).

5.2.2. Assessment two years after the catastrophe

A preliminary study based on inventories was conducted two years after the disaster between December 2012 and January 2013. With 93 anonymous participants ($N = 93$, 25 primary victims and 68 secondary victims), attitudes towards the altered environment, physical and mental status, social connections, resilience, and self-esteem of primary and secondary victims were examined.

Results showed that 56% of primary and 59% of secondary victims suffer from some kind of health problems which is considerably higher than among the average population in Hungary (Kopp & Skrabski 2008).[11] Participants who have experienced fear of death during the disaster were more likely to have a health problem (81.8% vs. 52.1%). Furthermore, 40% of respondents suffered from sleep disturbances, and 69% of them reported that the sleep disturbances had started after the disaster. Finally, 70.8% of the primary and 49.2% of the secondary victims experienced some kind of difficulties in their lives at that time. These difficulties were better explained by the degree of harm they suffered than by age, gender, or income.

Based on preliminary results we can definitely conclude that there were psychosocial consequences to the red mud disaster. However, a comprehensive study on a larger sample is still needed to further explore the impacts.

[10] Cf. V.Komlósi et al. in note 8 above.

[11] In a 2002–2006 longitudinal epidemiological follow-up study, 22% of men and 22.5% of women in Hungary considered their physical health to be bad in 2006. This number was higher (42% for men and 36% for women) among the participants who had passed away between 2002 and 2006 (Kopp & Skrabski 2008).

We can also state that some of these consequences could have been prevented or reduced by appropriate and well-organised interventions. Our suggestions on how to further improve Hungarian psychosocial care in the aftermath of a disaster are presented in the following list.

6. Suggestions

- Interventions would be more effective if data were continuously provided about the victims' condition. Registration of basic data and different interventions from the first phase to aftercare would be necessary. Instead of a longer professional assessment, we propose a data panel filled out by trained mental health professional volunteers after their visits.
- A central confidential database, accessible to *professional* volunteers, should be established in compliance with ethical rules.
- Everyone conducting research, interviews, inventories, or other types of studies should be familiar with the possible mental and physical consequences of traumatisation. In addition, they should also be familiar with related ethical rules.

7. Conclusions

The most important lessons learned in the aftermath of the disaster and areas to be improved in Hungarian crisis management are summarised as conclusions.

- CMS should be operating as a Complex Crisis Management System that provides complexity in two ways:
  - CMS protocol should provide continuity of crisis intervention from the acute phase all through long-term aftercare and ensure the relationship between these phases. Helper teams change in between the phases but victims remain the same and should be treated with consideration of previous interventions.
  - The CCMS coordinating team should include a representative of each discipline involved in order to promote and coordinate cooperation between different intervening agents. As WISNER (2011) proposed, referring to IDRiM:

    > It would bridge scales from the global to the local, involving a wide range of actors or stakeholders. It would draw on local as well as outside specialist knowledge, and this external knowledge would come from a wide array of professional and scientific fields from economics and the social sciences to the earth and biological science and engineering, public administration and communication. (WISNER 2011, 1)

- Professional complexity was present only within high-level leadership of CMS in time of the red mud disaster. Neither members delegated to mid-level CMS nor their way of operation was well thought trough.

– As psychosocial interventions are of great importance throughout the entire crisis management process, experts should be delegated into mid-level CMS leadership.
– Protocol should include ways of funding and institutional resources to provide compensated institutional psychosocial work on site after three months' volunteer work.
– All methods and competence that psychology has to offer should be utilised, far beyond clinical treatment. (E.g. psychological first aid, psychoeducation, mediation, coaching, stress management, conflict resolution, counselling, community building, etc.)
– Promoting resilience and social cohesion (as social capital) should be a priority in CCMS. Victims should regain control over their lives as soon as possible, their sense of control and competence and their social cohesion should be supported.
– The use of media and social media should have special attention. An effective and dedicated communication strategy should be designed for CCMS for the entire process of aftercare including guidelines for mid-level decision makers.
– According to our experiences in the aftermath of the red sludge disaster, most members of the Hungarian CMS were not aware of the importance of psychosocial interventions. We believe that psychosocial awareness should be represented in mid-level CCMS management, therefore, as a crucial element of prevention, we suggest lectures and/or trainings for municipal leaders and potential decision-makers about psychosocial processes in crisis situations.

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