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Letter

Embitterment in the general population after nine months of COVID-19 pandemic

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Short title: Increased embitterment during pandemic

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Dear editor

As recently pointed out by Linden and Arnold [1] in *Psychotherapy and Psychosomatics*, embitterment can occur as a reaction to perceived injustice or critical life events [1,2]. During the Corona-pandemic and restrictions in daily living due to infection-risk-management, a range of many smaller or severe injustice have occurred. Beside the often discussed increased rates of general mental health load during the pandemic [3-5], embitterment should be taken into consideration. We investigated how frequently embitterment is occurring during the Corona pandemic: We conducted an online survey including persons from the general population in November and December 2020, the phase during which a second lockdown took place, with closed shops, restaurants, cultural and activity sites.

3,208 persons participated. They were asked first to report whether and which burdens they had experienced so far during the pandemic. A selection of 13 corona-related events was given, such as having had a corona-infection, having lost one´s job, having lost a near-standing person, suffering from social distance, having experienced breakdown of medical treatments. Then participants gave self-ratings on their present well-being (WHO-5 [6]), and then on embitterment (PTED scale [7]). The instruction for filling in the embitterment scale was as follows: "In the past few months, I've had to deal with a life event, which made me …". Then 19 items are following which ask for embitterment ("…feel embittered…"), mood, thoughts of revenge etc.

Participants were on average 47.5 years old (*SD*=13.6, range 14-92); 55% were female. Half of the participants had a college or university diploma (54.3%), 39.9% had finished an apprenticeship, and 5.8% were without professional qualification. Most (69.3%) were married or in a relationship. 29.9% reported that they have already been in treatment with a mental disorder earlier in their life. This seems similar the general epidemiology of mental disorders, which is constantly about 30% [8]. 2% of the investigated have had a coronavirus infection. 80% of the sample said that they perceived relevant burdens during the pandemic.

High embitterment (score >=2.5 on the PTED scale [7] ranging from 0-4) occurred among 16% of the sample. There were more persons with embitterment (E: 9.5% of the total sample) than those with embitterment and a mental disorder (EM: 6.17%); 60.87% had no mental disorder and no embitterment (NN), and 23.4% had a mental disorder but no embitterment (M). Embitterment was only weakly correlated with unspecific mental well-being (*r*=-.258**). Embittered persons reported a higher number of social and economic burdens than persons without embitterment, e.g. job loss (E: 6%, EM: 12% versus NN: 3%, M: 6%).

The occurrence of embitterment of 16% during the pandemic is a quite high rate in comparison with 3% in pre-pandemic times in the same region [9]. When looking into the literature, we find that embitterment has already been brought into discussion in the context of the coronavirus pandemic [10], and increased rates of embitterment up to 15-45% may occur in contexts of critical life events [1]. Our research reports first empirical data on embitterment occurring in coincidence with events happening during the corona-pandemic.

One possible reason for this increased rate of embitterment is that critical events and injustices may have happened more often than normally during the pandemic, or that people perceive the ongoing and fast-changing conditions during the whole year of the pandemic with increasing anger. Embitterment is one of the few mental health conditions that occurs in an event-related manner [2]. It can be triggered in healthy persons by events of injustice [2]. Embitterment is distinguishable from general mental disorders. Economic and social consequences of pandemic management should be carefully recognized and prevented by policy.

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Author contribution: B.M. provided the research question and study design, analysed the data and wrote the manuscript. A.S. and C.V. collected the data and contributed to data analysis.

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