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100 Years apart: Psychiatric admissions during Spanish flu and COVID-19 pandemic

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ABSTRACT

The last pandemic comparable to the current COVID-19 pandemic was the Spanish flu. Using the admission record books for the years 1917 and 1918 and electronic health records for the years 2019 and 2020, we extracted the relevant data and explored how they affected the numbers of emergency psychiatric admissions. The general trend in both pandemics was that they did not cause a rise in psychiatric admissions, findings which go along with reports around Europe. The causes for these similarities are complex but provide an interesting perspective as to why there is no concurrent rise in emergency psychiatric admissions.

1. Introduction

Over past decades the world has experienced several pandemics, but not at the scale or impact of the current COVID-19 pandemic, at least not since the Spanish flu. It has become apparent that the current pandemic is affecting our lives in several ways; the fluctuating nature of the disease, social isolation, economic crisis, disrupted daily routines, and prolonged periods of uncertainty are considered major stressors in the context of mental health. Many authors have speculated these stressors would lead to a rise in mental health problems during the pandemic. Research suggests that the health workers have coping difficulties (Muller et al., 2020), and psychiatric consequences in patients with COVID-19 have been reported (Taquet et al., 2021). Furthermore, studies show increased depression, anxiety, and stress levels in the general population (Lou et al., 2020). Several new papers are showing the worsening of pre-existing conditions, or even newly diagnosed psychiatric disorders, pertaining to substance abuse (Taylor et al., 2021), OCD (Khosravani et al., 2021), and brief psychosis in BPD (Valdes-Florido et al., 2021) but also ambiguous results regarding suicide rates (Tanaka and Okamoto, 2021). However, to our knowledge, reports show no increase in general emergency psychiatric admissions during this period (Gonçalves-Pinho et al., 2020; Poremski et al., 2020). In light of these findings, it is interesting to consider the question of psychiatric admissions during similar events, such as Spanish flu.

University Psychiatric Hospital Vrapče, established in Zagreb in 1879, was the central psychiatric institution in Croatia by the time of Spanish flu started. Two distinct waves characterized the Spanish flu in Zagreb, the first in the late summer of 1918 and the second at the beginning of 1919 (Fatović FerenčićandŠain, 2020), coinciding with the disease's progression throughout Europe (Trilla et al., 2008). The first wave peaked in October and ended simultaneously with the end of the first world war (Fatović Ferenčić and Šain, 2020). The second wave was smaller in Zagreb and did not result in many casualties (Fatović Ferenčić and Šain, 2020). The literature regarding mental health at the time of the pandemic is scarce, but the available literature shows that the general population was more concerned about poverty and the consequences of war than the pandemic itself (Kuhar and Fatović Ferenčić, 2020). Therefore, during the first wave, the government did not immediately notify the public about the pandemic until the beginning of September, when schools were closed for a period of 14 days (Fatović Ferenčić and Šain, 2020). Moreso, the newspapers did not cover the pandemic as much, as they concentrated on the active war throughout Europe (Fatović Ferenčić and Šain, 2020; Trilla et al., 2008). COVID-19 pandemic started in Zagreb in late February 2020, and three weeks later, the whole country went into lockdown. The lockdown began to ease in late April and, through 3 phases, ended in mid-May. Throughout the

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entire pandemic, in Croatia and the rest of the world, the news reported on the pandemic daily, sometimes sending contradicting information. While the current pandemic was not accompanied by war, Zagreb has been hit with a 5.5 Richter magnitude earthquake just a few days after the lockdown started.

2. Methodology

Using the admission records, we extracted data on emergency psychiatric admissions in our institution during both pandemics and the comparable period of the year preceding them. We extracted all admitted patients' data, voluntary and involuntary, for the period from June to the end of December, for the years 1917 and 1918. We excluded WWI soldiers and forensic cases as their admission to the hospital was influenced by other factors. All of the ***"classic"*** diagnoses were reclassified into diagnoses according to the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10). Diagnoses were clustered into diagnostic groups, when appropriate, and some diagnoses remained outside of specified diagnostic clusters (supplement Table 1.). For the COVID-19 pandemic, we extracted admissions data for the period between February and November of 2020 and the same period in 2019. Finally, we compared the emergency psychiatric admissions in the corresponding pandemic years to a previous 3-year average of emergency psychiatric admissions before, eliminating WWI's possible bias influencing the Spanish flu pandemic results and seasonal and yearly variations in observed periods.

3. Results

During both pandemics, we observed a modest dip in acute psychiatric admissions compared to a three-year period average before the pandemics (Fig. 1). When comparing the differences between monthly admissions, during the year 1917 and 1918, there was a small decrease in emergency psychiatric admissions during the Spanish flu pandemic

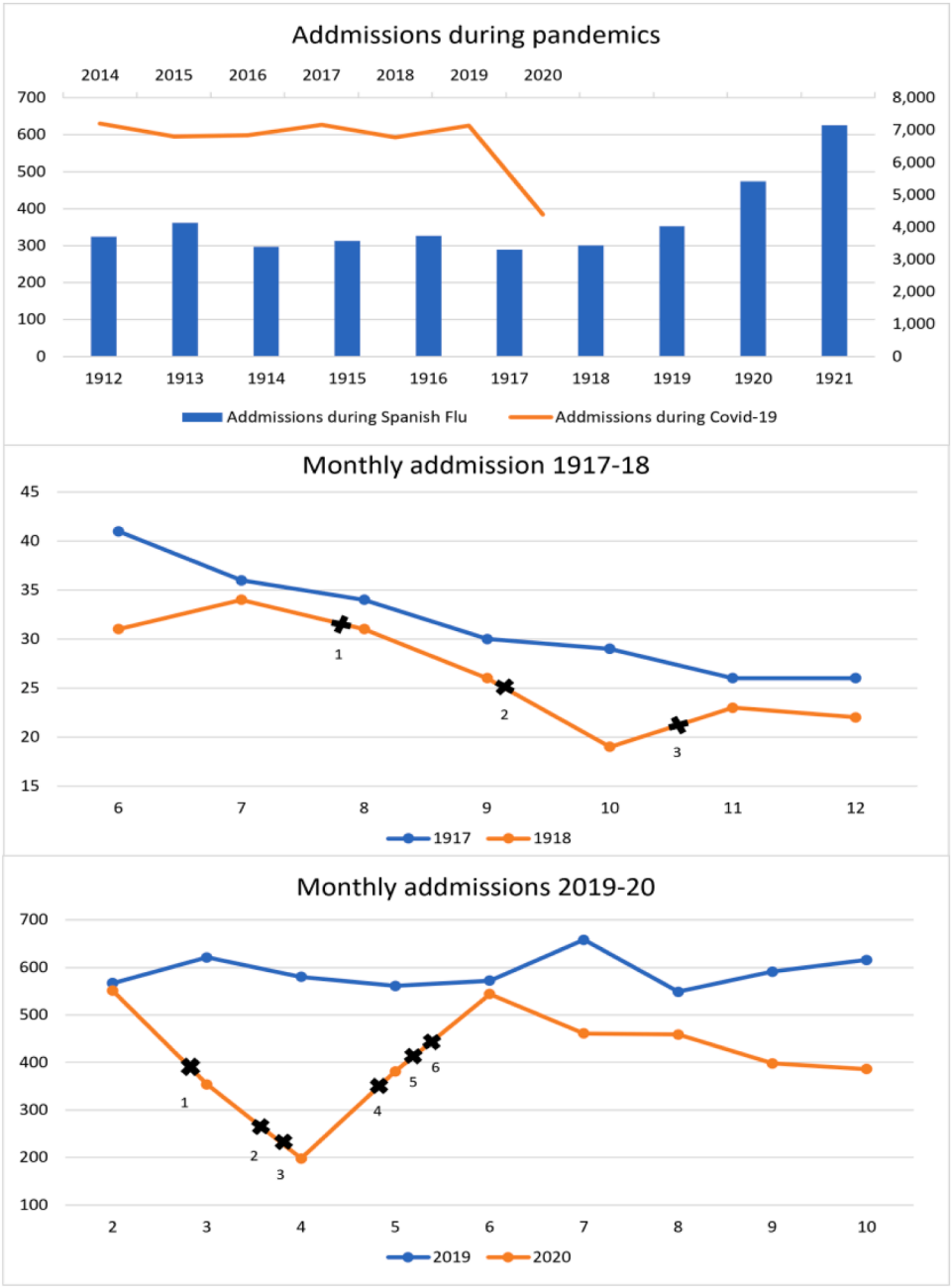

Fig. 1. Yearly and monthly emergency psychiatric admissions during pandemic periods.
Upper: Emergency psychiatric admissions related to the COVID-19 pandemic period is the orange line; the observed period was from 2014 to 2020 (right vertical axis). The emergency psychiatric admissions associated with the Spanish Flu pandemic period are represented in blue bars; the observed period was from 1912 to 1921 (left vertical axis).
Middle: Admissions during 1917. are represented with a blue line, while the admissions during the Spanish Flu pandemic are represented with an orange line. The numbers highlight important dates during the Spanish Flu pandemic (1= first case; 2= partial lockdown, 3= peak of the pandemic).
Lower: Admissions during 2019 are represented with a blue line, while the admissions during the COVID-19 pandemic are represented with an orange line. The numbers highlight important dates during the COVID-19 pandemic (1= first case; 2= lockdown start; 3= earthquake; 4–6= three phases of lockdown easing).

(Fig. 1, supplement Table 1). There was a reduction in emergency psychiatric admissions during the COVID-19 pandemic compared to the same period the year before (Fig. 1, supplement Table 1). The observed trend continues throughout the summer as the admissions did not "rebound," and there were continuously fewer admissions than the previous year (Fig. 1). A similar trend can be observed for the Spanish Flu pandemic; the lowest admission rates were observed during the partial lockdown and pandemic peak (Fig. 1). As the pandemic started to slow down again, we did not observe any relevant rise in admissions. After the first and the second wave of the Spanish flu pandemic ended, there was a rise in admissions possibly due to the war-related factors, as the hospital doubled the number of beds in the years following WWI to admit all the soldiers requiring care, and not necessarily as the direct result of pandemic aftermath rebound (Fig. 1). When looking at a specific diagnosis and their changes in the observed period, during the COVID-19 pandemic, the biggest decline was observed for the affective disorders group closely followed by schizophrenia spectrum disorders, while the smallest drop was observed in the non-specified psychotic disorders (supplement Table 1). In contrast, during the Spanish flu, the biggest decline in admission rates was observed in the psychoorganic disorder group, followed by schizophrenia spectrum disorders, while the affective disorders group saw a noticeable increase (supplement Table 1).

4. Discussion

During the COVID-19 pandemic, the most significant decline in emergency psychiatric admissions was observed for the affective disorders group and the smallest in the psychotic disorders group, confirming previous findings showing the same pattern of emergency psychiatric admissions dynamics during this pandemic (Gonçalves-Pinho et al., 2020). Moreso, the general lack of an increase in emergency psychiatric admissions was observed in several countries throughout Europe and the world (Poremski et al., 2020). The Spanish flu admissions also coincide with previous studies (van der Heide and Coutinho, 2006), showing that the pandemic had not caused a rise in emergency psychiatric admissions.

The circumstances surrounding these two pandemics were undoubtedly different, but the impact of the pandemics on emergency psychiatric admissions seemed to be strikingly similar. At least on the surface, these findings suggest a discrepancy between the real-world data and some theoretical expectations within the psychiatric community as well as in the general population. Although we included only emergency cases, as we can arguably assume that no long-term delay in accessing care would be possible in those cases, one could still expect that the patients had limited access to the healthcare system during lockdowns (e.g., reduction in transportation capacity and barriers imposed by the system itself). In light of that, it is important to note that during the COVID-19 pandemic, our emergency medical transport services were active throughout the period, and our hospital's emergency psychiatric unit provided care to all those seeking help and hospitalization. Likewise, during the Spanish flu, our hospital was large enough to accommodate anybody needing psychiatric attention (Kuhar and Fatović Ferenčić, 2020). Taking everything into account, we do not think that in our case, the limited access to psychiatric care was the dominant factor explaining the drop in hospitalizations, but we did not analyze these results in the context of patients diverted to telemedicine or regular outpatient services, so can not comment on the overall number of clients in all different forms of mental health care providing.

Furthermore, the profiles of patients admitted to hospitals in those two pandemics were undoubtedly different and accounted for some of the observed changes. With all this in mind, in both observed periods, the general decline in emergency psychiatric admissions cannot be explained with a single cause, and complex variables regarding the functioning of healthcare systems in general and psychiatric services specifically need to be taken into account. There are several reports from other areas of medicine pointing to a drop in referrals during the pandemic, which does not mean people do not need help, but just that they are not "sick enough" to warrant immediate intervention, and consequently happen to be less likely to use emergency care services. On top of that, we have to consider that some conditions need time to manifest themselves fully and reach severity levels demanding care and that the actual onset of psychiatric disorders caused by this pandemic could be lagging.

Maybe the phenomenon of resilience, the ability of a system to cope with change, could be a contributing factor, as external factors can raise the capacity for resilience (Friedberg and Malefakis, 2018). Paradoxically it is possible that all the media coverage, positive and negative, and the new focus on mental health eventually had a positive role on mental health resilience, as they prepared the general population for potentially worse things to come. It is essential to point out that most of the survey data showing an increase in anxiety, depression, and stress levels were collected during the first lockdown, meaning that these changes do not necessarily indicate an established psychiatric disorder but might represent psychological reactions accompanying the recruitment of all available coping capacities in the face of adversity. The notion of resilience can also be applied to the Spanish flu, as the population already had more considerable worries than the pandemic; war, significant poverty, and hunger. The observed drop in emergency psychiatric admissions during the pandemic might not necessarily mean people did not need help, but contact with mental health providers is not sought because of fear of infection and possibly discouraged by the system itself trying to stop the infection from entering hospitals. Although the presented data shows no rise in emergency psychiatric admissions during both pandemics, the underlying reasons are still uncertain and need to be reevaluated as time goes on. If we consider the possibility of "lagging onset" of psychiatric disorders, we need to additionally plan for interventions to reach out to those in need of help in order to prevent post-pandemic surges in psychiatric disorders and hospital admissions.

In medicine, as in life, we are often confronted with repeating patterns, and turning to historical records in attempts to explain the aspects of current events is something we should not forget to do. It is rightfully said that those who do not learn from the past are destined to repeat it.

Authors' contributions

JV and ND have made substantial contributions to the conception and design of the work; NZ and JS have acquired the data and did the analysis of the data; JV and MS have conducted literature research; MS and AS drafted the first version of the paper, JV, ND and AS revised it critically for important intellectual content; all authors have approved the final version and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Declaration of Competing Interest

All authors have no conflict of interest to report. Hereby all authors disclose that they do not have any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2021.114071.

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