

Effects of the measures to contain the Covid-19 pandemic on pre-existing mental vulnerabilities and disorders

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Abstract

This article deals with the following question: "What is the impact of certain pandemic control measures on patient groups with specific mental illnesses, and what are the economic effects on public health?"

For this purpose, 103 patients of psychotherapeutic practice in Germany in the periods before, during and at the current time (April, May 2021) were asked in a twenty-minute survey to indicate the development of their psychiatric symptoms concerning individual measures to combat the pandemic and concerning the general pandemic situation. The collected data were divided into specific diagnostic groups with single and multiple diagnoses and analyzed using the method of descriptive statistical analysis using the IBM SPSS software. As a result, it was found that specific measures to combat the pandemic had varying degrees of influence on the worsening of the specific symptoms of patients with single or multiple diagnoses. Due to the division of patients into diagnostic groups, the present study made it possible for the first time to differentiate and assess the course symptoms of various mental illnesses in the context of the Covid-19 pandemic. It has been shown that the presence of multiple psychiatric diagnoses causes an inflationary worsening of the symptoms. In addition, the specific influence of different measures on specific psychiatric diagnostic groups could be demonstrated. The authors conclude that the impact of specific pandemic control measures varies depending on the diagnostic group. It was also found that the economic impact is high due to the need for interdisciplinary and multimodal therapeutic approaches to combat the consequences for patients with pre-existing mental illnesses.

Keywords: measures to combat the pandemic, psychological effects of COVID-19, multimodal psychotherapeutic approaches

JEL codes: I00, I18

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1. Introduction

Covid-19 has significantly changed social life in Germany since 2020. To stop the spread of this virus, various drastic, unprecedented measures have been used to contain it. These include home isolation, mask requirements, closure of shops, restriction of leisure activities, especially the restriction of social contacts. Since then, these legally adopted measures and recommendations have led and continue to lead to significant uncertainty and further emotional stress for many mentally ill patients, which inevitably help shape the therapeutic process and potentially have a long-term effect on psychiatric-psychotherapeutic health care in practices, as these patients represent a particularly vulnerable group for stressful situations. (Özgör 2021)

To be able to adapt to the necessary measures, a changed therapy design and new therapy tools were first necessary in the practices, such as Internet-based and telephone-based psychotherapy, adapted hygiene concepts, mask obligation and keeping a distance during outpatient treatment, to be able to guarantee patient care at all, which is also economically and socially justifiable. This was initially intended to counteract a further overload of the existing psychotherapeutic and psychiatric care system, which led to further stress in the psychotherapeutic practices and the affected patients themselves.

These measures have a specific impact on mental health, in general, has been proven in many international studies. (Strauss et al. 2021, p. 180) However, the extent to which specific subgroups with existing mental disorders react differently has hardly been researched so far.

In addition to the individual influencing factors, social and socio-economic factors also play an essential role in determining how coping with the defined measures proves to be successful or unsuccessful. (Strauss et al. 2021, p. 180)

The experiences in outpatient practice have led the authors to examine this topic in a more differentiated way and investigate the extent to which mentally ill subgroups are affected to varying degrees as particularly vulnerable groups and increasingly require exceptional support. This opens opportunities to meet better the harmful effects of pandemic control measures in treatment in the future and to assess the need for action better.

The results of the first three pandemic waves presented here are intended to show whether the measures and which specific measures and orders have had a stressful effect on the symptoms of the subgroups surveyed. This allows an initial assessment of which subgroups, in contrast to others, currently have an increased vulnerability and which do not. With the present study, the authors want to generate new findings to close part of the research gap identified.

Literature Review

The patients with pre-existing psychological vulnerabilities and disorders, who receive little attention in pandemic research, show a significantly more substantial and more frequent exacerbation of psychological symptoms than in the mentally healthy general population. According to several pieces of research and meta-analyses, the corona pandemic has led to a sharp increase in the incidence of various mental health problems,

especially in the areas of depressive disorders, anxiety disorders, stress symptoms and sleep disorders. (Bach and Bitterlich 2021)

These values are also consistent with our results, whereby the different values in the individual subgroups differ considerably in their severity.

Based on a representative population sample, Bach and Bitterlich recruited 987 people in the period from 17.03.2021 to 20.04.2021. These had to answer 13 screening questions on trauma-related symptoms according to DSM-5, screenings for the detection of generalized Anxiety (GAD -2) and screenings for the presence of depression (PHQ-2), so that with the help of these instruments, a high probability of the presence of trauma-related symptoms, and depression could be confirmed or not confirmed. In addition, data on age, gender, migration background, level of education, and questions on general health and Covid-19 diseases were included in the study. (Bach et al. 2021)

In 18.1% of respondents, 23.6% showed an increased frequency of anxiety and 24.4% of depression due to frequencies of trauma-related symptoms. In addition, there was an influence of anxiety, depression and socio-demographic data on the degree of formation of trauma consequence symptoms. Individuals were significantly more likely to show trauma-related symptoms and generalized anxiety, but no depression, after Covid-19 illness or after experiencing the condition in loved ones. From this, the authors' Bach and Bitterlich concluded that the development of depressive symptoms is more likely to result from the general psychosocial stresses and limitations of the Covid-19 pandemic. In contrast, anxiety and trauma symptoms are more likely to represent specific patterns of experience processing after Covid-19 illness.

This study confirms the connection between Covid 19 symptoms and the increased occurrence of trauma sequelae, but was unable to show whether and which pre-existing conditions were already present at the beginning of the pandemic and were exacerbated by it, and which symptoms only developed in the course of the Covid 19 pandemic as a further psychological consequence for persons suffering from mental illness, especially since there is little evidence in the literature regarding psychological effects in persons with specific mental or psychiatric pre-existing conditions.

One of the few examinations of patients with pre-existing mental illnesses comes from China. In a 2020 Chinese study, Hao and colleagues (Hao et al. 2020) used an online questionnaire to assess and compare the immediate burden and psychological and psychiatric effects of 76 (out of 666 people contacted) with pre-existing conditions and 109 (out of 130 people contacted) in a control group without pre-existing psychiatric conditions during the Covid-19 epidemic.

The psychiatric and psychological symptoms were determined using the Impact of Event Scale-Revised (IES-R), the Depression, Anxiety and Stress Scale (DASS 21) and the Insomnia Severity Index in this study. Same diagnostic groups were not identified.

All scores were higher globally in psychiatric patients than in the healthy control group: anger, impulsivity, and suicidal thoughts. More than a third of patients with pre-existing mental illnesses met the diagnostic criteria of PTSD, and more than a quarter of psychiatric patients had insomnia. Respondents who reported unchanged poor or poorer health and were diagnosed with a psychiatric disorder were significantly more likely to have higher mean IES-R, DASS depression, anxiety, and stress scales. In this respect, this study confirms more severe adverse psychological effects and burdens in patients with pre-existing mental illnesses compared to the 'healthy sample'. (Hao et al. 2020)

Unfortunately, the pre-existing psychiatric conditions were not examined more differently but only identified as an entire group.

There is no research on the effects of the pandemic and its measures in diagnosis-dependent groups and their comparisons, which is why the present study contributes to these high-risk groups to close this research gap.

Winkler and colleagues (Winkler et al. 2021) went a step further and examined the psychological consequences of the Covid-19 pandemic for 682 mentally ill people in a retrospective study. Two diagnoses were made in 266 patients and considered in two diagnostic groups. Winkler et al. 2021 confirm diagnosis-dependent significant differences in the increase in psychological symptoms in mentally ill people and individual diagnostic groups according to ICD-10. (F1, F10, F2, F3, F4-40, F4-F42/44/45, F43.1, F6 and others such as F0, F7, F8, F9 combined). "We hypothesized that there will be diagnosis-dependent differences both for the clinical worsening of the symptoms and for the subjective perception of the burdened cause." (Winkler et al., 2021)

In this secondary analysis, data could be collected before the lockdown measures and during the lockdown measures. 'None' a 'slight' and a 'severe' deterioration were shown as categories. The patients' statements regarding the subjectively perceived burdens were represented by the following categories: 'not burdened' and 'burdened'. as well as the type of load. (Here: burdened by fear of Covid-19, by measures, fear of infection and measures, by something else or lack of information) 44.2% of respondents reported spontaneous burdens from the pandemic, 25.5% suffered from the consequences of the measures taken. In 60.5%, a clinical worsening of the symptoms was noted, in 20.8%, even a severe load. Significant correlations with the diagnoses could be established for the severity and type of stress. For example, anxiety patients were significantly more likely to be afraid of a viral infection than other stresses (22.5%). A significant worsening of the symptoms could not be demonstrated in PTSD patients. Only two PTSD patients suffered re-traumatization due to the pandemic measures. Psychotically ill people felt little burdened by the pandemic. In depressed or post-traumatic patients, no significant differences could be determined compared to other diagnostic groups. (Winkler et al., 2021)

Also, the results of Kogler et al. (Kogler, A., Kogler, L. Schrunner, M. et al.) point to a heavy burden on people with pre-existing mental illnesses due to the Covid-19 pandemic and the measures ordered.

It was investigated in a study by Huang et al. in China. A significantly higher burden of the Covid-19 pandemic was found in anxiety patients than a 'healthy sample' and a significantly higher burden of stress and insomnia. (Huang and Zhao 2020)

In the symposia and seminars of the German Pain and Palliative Day 2021, the consequences of the Covid-19 pandemic for pain patients were increasingly addressed. The experts agreed that chronic pain patients would be significantly worse off under the pandemic conditions and the associated restrictions than before. Among other things, a survey at the Pain Clinic Wuppertal was taken as a basis. In the study, 44% of pain patients reported that their pain had increased during the pandemic, and 70% of patients surveyed reported a worsening mood. Since many therapy offers would only be available to a minimal extent, digital solutions or video consultations were proposed as a solution for the treatment of pain patients. (Funck)

Overall, it can be seen that many unfamiliar pandemic measures are a cause for increased concern among mentally stressed individuals, as these measures are significant stressors, and an increased risk of psychiatric illnesses associated with Covid-19 can be demonstrated. (Pfefferbaum and North 2020)

The studies mentioned above show that the prescribed measures increasingly burden patients with pre-existing diseases.

2. Methods

Our investigations investigate the following research question:

"What is the impact of certain pandemic control measures on patient groups with classified mental illnesses (ICD-10: F-Classifications), and what are the economic implications for public health?"

This examination is carried out with the help of a patient survey and a subsequent descriptive statistical analysis of the different result values of the selected diagnostic groups. (Bühner and Ziegler 2009)

Description of the survey and the data collected

In a written survey of about 15-20 minutes, 103 patients with written consent were interviewed during the three previous pandemic waves until June 2021 using a standardized, non-representative, self-designed questionnaire, who were treated on an outpatient basis. (Note: The current development of the pandemic can also be very well understood based on data from Johns Hopkins University <https://coronavirus.jhu.edu/map.html> and the Robert Koch Institute, RKI).

The increase or decrease in specific psychological symptoms became certain measures (such as mask requirements, Lockdown, contact restriction, closure of shops, restriction of leisure activities, restriction of social contacts) in certain diagnostic groups (group 1: pain, depression, PTSD; Group 2: pain, depression; Group 3: depression, PTSD; Group 4: depression; Group 5: Other) at the time of the survey from April 2021 to June 2021, whereby primary and secondary diagnoses could not be distinguished. Furthermore, the survey was conducted in three different survey periods. ⁴

Concerning their psychological stress, the subjects were currently treated outpatient in individual therapy and group therapy. In some cases, interviews were carried out by video consultation. Group therapies took place predominantly – depending on the measure – in face-to-face, hybrid or webinar form.

73 female and 30 male subjects with different psychiatric pre-existing conditions took part in the study. Assessments of the critical messages of the study were collected from all respondents. Mood, sleep disorders, fears, pain, loneliness, and adjustment difficulties were queried during three different periods, with the subjects retrospectively providing information at the beginning of the first wave of the pandemic (first half of 2020), during the second wave (second half of 2020) and the third wave (first half of 2021). This information was integrated into the standard psychological diagnostic groups collected by

⁴ Contains the following diagnoses according to ICD-10: F 40.2, F 40.01, F 40.8, F 45.2, F 54.0, F 60.31, F 60.6, F 60.8, F 61.0, F 62.0

the practitioners. In addition, the age, gender, educational attainment, and nationality of the patients were included in the study. The data collection was completed in June 2021.

Description of the data

Age

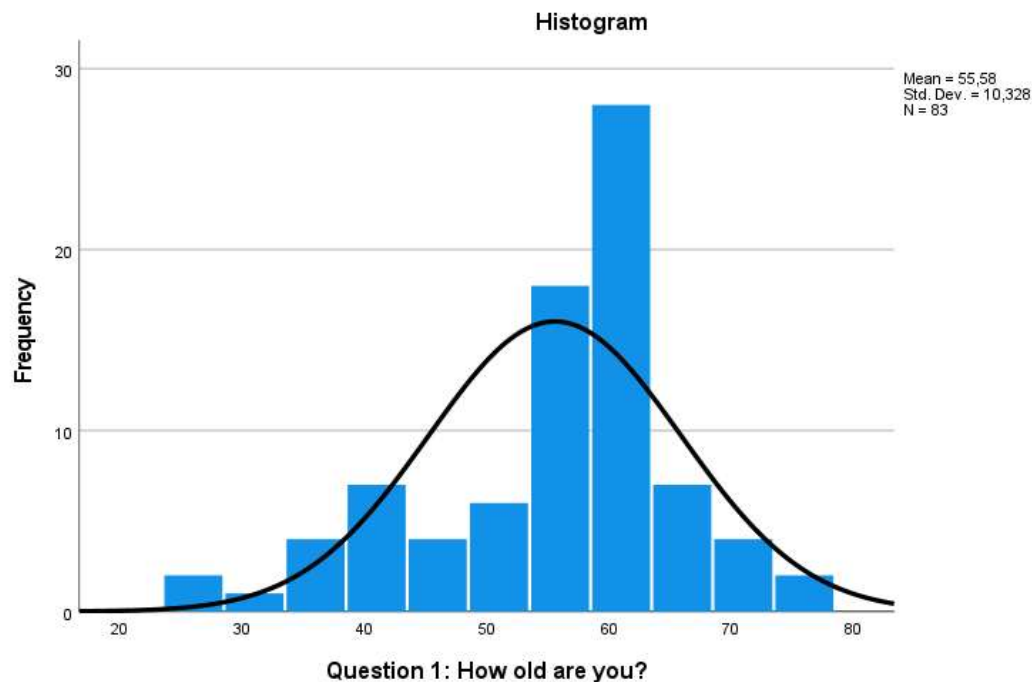


Figure 1: Age of subjects

According to Gauss, the age distribution is not subject to the normal distribution, as shown in Figure 1. Subjects with an average mid-40s and early 50s are underrepresented in the survey, while subjects with an average age of 60 are overrepresented. Most of the subjects in the survey were in their late 50s or years. In their early 60s, that is 36 subjects or more than 50% of all subjects.

Sex

Table 1: Overview of the sex of the subjects

		Frequency	Percent
Valid	female	73	70,9
	male	30	29,1
	Total	103	100,0

As shown in Table 1, the survey was conducted with 73 female and 30 male persons and not a person of the third sex.

Origin

Most of the subjects (96) come from Germany, one from Austria, three from Turkey and three from Italy.

Education

Table 2: Overview of the subjects' educational attainment

		Frequency	Percent
Valid	Secondary school	32	31,1
	Secondary school leaving certificate, Secondary school leaving certificate or equivalent	38	36,9
	Fachabitur, Fachhochschulreife	11	10,7
	Abitur, university entrance qualification	3	2,9
	University of Applied Sciences/University Degree	19	18,4
	Total	103	100,0

Table 2: A total of 70 persons have a Hauptschule or Realschulabschluss, 11 persons have Fachhochschulreife, three persons Abitur and 19 persons have a university degree, whereby always the highest educational qualification was collected.

Diagnostic Groups

The subjects were divided into five diagnostic groups according to ICD-10, see also Table 3:(World Health Organization 1999)

1. Pain, Depression, post-traumatic stress disorder (PTSD): 15 subjects
(ICD-10: F 45.3, F 45.4; F 32.0 - F 32.8, F 33.0 – F 33.8; F 43.1⁵)
2. Pain, Depression: 14 subjects
(ICD-10: F 45.3, F 45.4; F 32.0 - F 32.8, F 33.0 – F 33.8)
3. Depression, PTSD: 29 subjects
(ICD-10: F 32.0 - F 32.8, F 33.0 – F 33.8; Q43.1)
4. Depression: 29 subjects
(ICD-10: F 32.0 - F 32.8, F 33.0 – F 33.8)
5. Other diagnoses: 16 subjects

⁵ Note: The trauma disorders were coded as PTSD.

(ICD-10: F 40.2, F 40.01, F 40.8, F 45.2, F 54.0, F 60.31, F 60.6, F 60.8, F 61.0, F 62.0)

Table 3: Overview of diagnostic groups of subjects

		Frequency	Percent
Valid	Group 1: Pain, Depression, PTSD	15	14,6
	Group 2: Pain, Depression	14	13,6
	Group 3: Depression, PTSD	29	28,2
	Group 4: Depression	29	28,2
	Group 5: Other	16	15,5
	Total	103	100,0

3. Results

Mood

Overall, the mood of most subjects has deteriorated drastically, and anxiety, sleep disorders and psychosocial problems have increased significantly in all five groups. The most apparent covid-19-related burden was the question of loneliness. It turned out that 67% of all subjects suffer from intense feelings of loneliness, which have had a tremendous emotional burden.

Table 4: Diagnosis - Mood / Crosstab

Diagnosis – Mood / Crosstab				
		Which symptoms have increased during the Corona crisis – mood worsens		Total
		yes	no	
Group 1:	Number	13	1	14
Pain, Depression, PTSD	Diagnosis	92,9%	7,1%	100,0%
Group 2:	Number	11	2	13
Pain, Depression	Diagnosis	84,6%	15,4%	100,0%
Group 3:	Number	19	9	28
Depression, PTSD	Diagnosis	67,9%	32,1%	100,0%
Group 4:	Number	18	11	29
Depression	Diagnosis	62,1%	37,9%	100,0%
Group 5:	Number	9	6	15
Other	Diagnosis	60,0%	40,0%	100,0%
Total	Number	70	29	99
	Diagnosis	70,7%	29,3%	100,0%

Table 4: All groups showed a deterioration in psychological mood. Group 1 was most affected with 92.9% (Pain, Depression, PTSD), followed by group 2 (Pain, Depression) with 84.6% and group 3 (Depression and PTSD) with 67.9%. Also, 62.1% of the depressed subjects were subjectively burdened in their mood by the pandemic.

Table 5: Increase in Anxiety

		Diagnosis – increase in anxiety/crosstab		
		Which symptoms have increased during the Corona crisis - Fears		Total
		yes	no	
Group 1:	Number	11	2	13
Pain, Depression, PTSD	Diagnosis	84,6%	15,4%	100,0%
Group 2:	Number	10	4	14
Pain, Depression	Diagnosis	71,4%	28,6%	100,0%
Group 3:	Number	18	10	28
Depression, PTSD	Diagnosis	64,3%	35,7%	100,0%
Group 4:	Number	13	14	27
Depression	Diagnose	48,1%	51,9%	100,0%
Group 5:	Number	8	8	16
Other	Diagnosis	50,0%	50,0%	100,0%
Total	Number	60	38	98
	Diagnosis	61,2%	38,8%	100,0%

Table 5: The occurrence of increased anxiety during the Covid-19 pandemic is most pronounced in Group 1 with 84.6% (pain, depression, PTSD). Overall, 61.2% of all subjects reported a significant increase in their fears.

Table 6: Increase in sleep disorders

Diagnosis – increase in sleep disorders/crosstab				
		What symptoms have increased during the corona crisis - sleep disorders		Total
		yes	no	
Group 1:	Number	7	6	13
Pain, Depression, PTSD	Diagnose	53,8%	46,2%	100,0%
Group 2:	Number	9	5	14
Pain, Depression	Diagnosis	64,3%	35,7%	100,0%
Group 3:	Number	16	13	29
Depression, PTSD	Diagnosis	55,2%	44,8%	100,0%
Group 4:	Number	14	13	27
Depression	Diagnosis	51,9%	48,1%	100,0%
Group 5:	Number	7	9	16
Other	Diagnosis	43,8%	56,3%	100,0%
Total	Number	53	46	99
	Diagnosis	53,5%	46,5%	100,0%

As shown in Table 6, an increase in sleep disorders of 64.3% is increased in group 2 (pain/depression).

Table 7: Increase in pain

Diagnosis – increase in pain/crosstab				
		What symptoms have increased during the corona crisis - pain		Total
		yes	no	
Group 1:	Number	10	5	15
Pain, Depression, PTSD	Diagnosis	66,7%	33,3%	100,0%
Group 2:	Number	11	2	13
Pain, Depression	Diagnosis	84,6%	15,4%	100,0%
Group3:	Number	9	19	28
Depression, PTSD	Diagnosis	32,1%	67,9%	100,0%
Group 4:	Number	6	19	25
Depression	Diagnosis	24,0%	76,0%	100,0%
Group 5:	Number	4	11	15
Other	Diagnosis	26,7%	73,3%	100,0%
Total	Number	40	56	96
	Diagnosis	41,7%	58,3%	100,0%

Table 7: An increase in pain was also seen in group 1 (pain/depression/PTSD) in 66.7% of subjects and group 2: 84.6%. A total of 41.7% of all subjects experienced increased pain, although the subjects in groups 3-5 do not have a pain diagnosis.

Table 8: Increase in psychosocial problems

		Diagnosis – increase in psychosocial problems/crosstab		
		What symptoms are more likely to have increased during the corona crisis - psychosocial problems		
		yes	no	Total
Group 1:	Number	9	4	13
Pain, Depression, PTSD	Diagnosis	69,2%	30,8%	100,0%
Group 2:	Number	10	4	14
Pain, Depression	Do you have a diagnosis?	71,4%	28,6%	100,0%
Group 3:	Number	18	9	27
Depression, PTSD	Diagnosis	66,7%	33,3%	100,0%
Group 4:	Number	12	13	25
Depression	Diagnosis	48,0%	52,0%	100,0%
Group 5:	Number	4	10	14
Other	Diagnosis	28,6%	71,4%	100,0%
Total	Number	53	40	93
	Diagnosis	57,0%	43,0%	100,0%

As shown in Table 8, an increase in psychosocial stress was observed in group 1 (Pain/Depression/PTSD) in 69.2% of subjects, in group 2 in 71.4% and group 3 in 66.7% of subjects.

Table 9: Increase in loneliness

Diagnosis – increase in loneliness/crosstab				
		What symptoms have increased during the Corona crisis - loneliness		Total
		yes	no	
Group 1:	Number	9	3	12
Pain, Depression, PTSD	Diagnosis	75,0%	25,0%	100,0%
Group 2:	Number	10	3	13
Pain, Depression	Diagnosis	76,9%	23,1%	100,0%
Group 3:	Number	19	9	28
Depression, PTSD	Diagnosis	67,9%	32,1%	100,0%
Group 4:	Number	18	10	28
Depression	Diagnosis	64,3%	35,7%	100,0%
Group 5:	Number	7	8	15
Other	Diagnosis	46,7%	53,3%	100,0%
Total	Number	63	33	96
	Diagnosis	65,6%	34,4%	100,0%

Table 9: An increase in loneliness was consistently shown to be significantly increased in all groups, with groups 1 and 2 having the highest values.

Table 10: Increase in stress

Diagnosis – increase in stress/crosstab

		What symptoms have increased during the corona crisis - stress		Total
		yes	no	
Group 1:	Number	11	3	14
Pain, Depression, PTSD	Diagnosis	78,6%	21,4%	100,0%
Group 2:	Number	11	3	14
Pain, Depression	Diagnosis	78,6%	21,4%	100,0%
Group 3:	Number	15	13	28
Depression, PTSD	Diagnosis	53,6%	46,4%	100,0%
Group 4:	Number	13	14	27
Depression	Diagnosis	48,1%	51,9%	100,0%
Group 5:	Number	7	8	15
Other	Diagnosis	46,7%	53,3%	100,0%
Total	Number	57	41	98
	Diagnosis	58,2%	41,8%	100,0%

Table 10 shows similar results as Table 9 for the increase in stress, with the highest values occurring in groups 1 and 2.

Measures

Mask requirement

Due to the Covid-19 pandemic, contact restrictions were enforced quickly. These show effects on mental health in all diagnostic groups. As shown in *Table 11*, symptoms have worsened throughout the pandemic, especially in diagnostic groups 1 and 3. In diagnostic group 1, the assessment of subjects whose symptoms have worsened has increased from 5 to 7 and in diagnostic group 3 from 9 to 13. The average deterioration was 2 points. Diagnostic group 3 suffers the most from the mask requirement. See yellow markings for specific and important differences.

Table 11: Measure - Mask requirement

	Mask obligation - at the beginning			Mask obligation - during			Mask obligation - current/current		
	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved
Pain, Depression, PTSD	5	10	0	8	7	0	7	8	0
Pain, Depression	6	5	3	6	6	2	7	5	2
Depression, PTSD	9	19	0	10	16	2	13	13	1
Depression	4	23	1	7	21	0	6	22	0
Other	4	11	1	4	11	1	4	11	1

Lockdown

Table 12: Measure - Lockdown

	Lockdown - at the beginning			Lockdown - during			Lockdown - current/current		
	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved
Pain, Depression, PTSD	8	7	0	9	6	0	12	2	1
Pain, Depression	7	5	2	7	4	3	11	0	3
Depression, PTSD	12	13	2	13	13	1	17	10	0
Depression	11	13	4	19	7	2	15	11	2
Other	4	11	1	5	10	1	6	9	1

Table 12 shows a worsening of the existing symptoms of the subjects in all diagnostic groups. The average deterioration was 3.8 points. Diagnostic group 3 is the most affected by the Lockdown.

Contact Restriction

Table 13: Measure - Contact restriction

	Contact Restriction – at the beginning			Contact Restriction – during			Contact restriction - current/current		
	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved
Pain, Depression, PTSD	8	6	1	8	6	1	12	2	1
Pain, Depression	7	6	1	8	5	1	11	3	0
Depression, PTSD	11	16	1	19	8	0	23	5	0
Depression	15	12	1	21	6	1	18	9	1
Other	5	9	2	8	7	1	9	6	1

As shown in Table 13, the individual perception of the worsening of their symptoms has developed most negatively among the subjects because of the contact restriction measure. The average of the deterioration was 5.4 points. A unique feature is significant in group 4: In this group, the subjective perception of the deterioration of their symptoms has developed strongly negatively over time and improved again in the further course of time. Diagnostic group 3 is most affected by the contact restrictions.

Closure of shops

Table 14: Measures - Closure of business

	Business closure – at the beginning			Business closure – during			Business closure -current/current		
	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved
Group 1: Pain, Depression, PTSD	4	10	0	3	11	0	6	8	0
Group 2: Pain, Depression	8	6	0	6	8	0	7	7	0
Group 3: Depression, PTSD	5	22	1	8	20	0	11	17	0
Group 4: Depression	6	20	2	10	16	2	11	15	2
Group 5: Other	5	10	1	2	13	1	2	13	1

Table 14 shows the slightest negative development of the individual perception of the worsening of the subjects' symptoms. The average deterioration here was 1.6 points. In

diagnostic groups 2 and 5, even a slight improvement could be detected. Diagnostic group 3 is most affected by the closure of stores.

Restriction of leisure activities

Table 15: Measures - Restriction of leisure activities

	Restriction of leisure activities - at the beginning			Restriction of leisure activities - during			Restriction of leisure activities - current/current		
	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved
Group 1: Pain, Depression, PTSD	8	7	0	11	4	0	12	3	0
Group 2: Pain, Depression	7	6	1	8	6	0	10	4	0
Group 3: Depression, PTSD	17	11	0	19	9	0	21	6	1
Group 4: Depression	15	11	2	20	6	2	20	6	2
Other	7	8	1	7	9	0	7	9	0

Table 15 shows the worsening of symptoms caused by the restriction of leisure activities. This was an average of 3.2 points for all diagnostic groups. Diagnostic group 4 is most affected by the restrictions on leisure activities.

Restriction of social contacts

Table 16: Measures – Restriction of social contacts

	Restriction of social Contacts - at the beginning			Restriction of social Contacts - during			Restriction of social contacts - current/current		
	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved	Symptoms worsened	No effect	Symptoms improved
Group 1: Pain, Depression, PTSD	9	5	1	11	4	0	12	2	1
Group 2: Pain, Depression	7	5	2	9	4	1	10	3	1
Group 3: Depression, PTSD	15	12	1	18	10	0	21	6	1
Group 4: Depression	14	14	0	19	9	0	19	9	0
Group 5: Other	8	7	1	9	6	1	9	6	1

Table 16: The restriction of social contacts has worsened the subjects' symptoms by an

average of 3.6 points. Diagnostic groups 3 and 4 are most affected by deterioration. Diagnostic group 3 is most affected by the restriction of social contacts.

Overall, it can be stated that the specific measures to combat the pandemic in group 3 have triggered the most damaging development of symptoms.

Table 17: Overview of the average worsening of symptoms due to specific measures.

Measures	Ø the worsening of symptoms
Mask requirement	2
Lockdown	3,8
Contact Restriction	5,4
Closure of shops	1,6
Restriction of leisure activities	3,2
Restriction Social Contacts	3,6

Table 17: Of the specific measures, contact restriction has the most substantial influence on the worsening of symptoms; see also Tables 11 to 16.

4. Discussion

The data in our study make it clear that there is a significantly higher increase in psychological symptoms and burdens from the pandemic and its measures in all subgroups. In addition, different manifestations of specific symptoms can be observed between the subgroups, which, apart from the stresses associated with the disease, have tremendous stress than other subgroups. Here it becomes apparent that patients with multiple diagnoses (groups 1-3) suffer more from the measures than the patients of groups 4 and 5, whereby substantial differences between the groups are also recognizable here.

In all groups, there was a deterioration in psychological mood, with group 1 (pain, depression, PTSD) subjectively having the most significant burden in their mood due to the pandemic at 92.9%, followed by group 2 (pain, depression) at 84.6%, as opposed to group 4 (depression) with 62,1%. According to the authors, this phenomenon can be explained by these groups' lack of coping strategies. Coping with the crisis requires a high degree of flexibility and adaptation to new circumstances, which are only possible to a limited extent for groups 1 and 2, since psychological symptoms such as depression, sleep disorders, and anxiety manifest themselves even in 'healthy samples', as the research cited above has shown.

Our study also confirms this, as clearly shown in Tables 5 to 10. One of the reasons is that patients are constantly asked to behave flexibly due to the changing measures and adapt to new situations and situations repeatedly, which they usually fail adequately due to their high vulnerability. This leads to significant uncertainty, irritation and confusion, as stress, anxiety and depressive symptoms are already occurring in the general population due to the pandemic and its measures. (Quervain et al. 2020)

Our results thus confirm the study results by Bach and Bitterlich, and Hao. Similar results were found about the increased occurrence of psychological symptoms due to the (Bach and Bitterlich 2021)(Hao et al. 2020)Covid-19 pandemic. However, in the studies listed

above, no distinction was made between specific diagnostic groups. Nor was there any differentiation of the study on specific measures to combat the pandemic and their influence on the subsequent symptoms of the patients.

It can be assumed that persistent states of emergency are perceived more intensively by patients with pre-existing specific mental illnesses than others, with varying degrees of symptom manifestation consistently detectable in all groups (see Tables 4, 5, 6, 7 and 10). High symptom levels are particularly evident in the groups with multiple diagnoses (especially in groups 1 and 2), confirming this thesis. Patients with the sole diagnosis of depression suffer less severely than patients from groups 1 to 3. 35.7% of depressed patients do not report loneliness since depressed patients feel the need to withdraw from social life. As a result, they find their way more quickly in isolation, as the present limitations complement the clinical picture.

If further diagnoses are added, such as pain and PTSD (groups 1 and 2), the focus is more on chronic pain or PTSD, whereby the multitude of symptoms reinforce each other and form circuits that need to be broken. It seems to be proven that additional diagnoses added to the diagnosis of depression cause the crucial difference in the subjective perception of the worsening of symptoms. Due to their often-limited mobility, patients very quickly feel excluded from social life, focus increasingly on pain and PTSD, process it depressed, accompanied by feelings of loneliness, as can also be seen in Table 9. Group 2 has the highest values with 76.9% and Group 1 with 75.0%.

The available findings from our study also confirm (Winkler et al. 2021) Winkl's results, whereby in our study, patients with multiple diagnoses were taken into account and divided into specific diagnostic groups that occur in the clinical picture. In addition, Winkler et al. analyzed a larger sample with 682 subjects than was possible in our study. Winkler comes with a symptom worsening of 60.5% of those affected. Our study can confirm this; we come to 61.5% symptom worsening in individual diagnoses in the present study. However, our study comes to a worsening of symptoms of 81.8% with multiple underlying diagnoses. Therefore, we can note that the presence of multiple diagnoses causes an inflationary worsening of symptoms.

Regarding the comparisons of the diagnostic groups with each other, we come to the following conclusions concerning the individual measures to combat the pandemic and the effects of the pandemic situation in its entirety on the severity of the symptoms:

In group 1 a deterioration in the mood of 92.9% is recognizable, followed by fears 84.6% and increased stress levels 78.6%. A comparative study is not yet available in the research literature since the studies' results so far refer exclusively to individual diagnoses in the studies or generally to the group of mentally ill people without differentiation into specific diagnostic groups. However, we can assume that introducing specifically ordered measures will have an additional strengthening effect on the primary symptoms and inevitably lead to a malignant cycle (see Tables 11-16).

It can be assumed that the sum of all measures to combat the pandemic and other factors of the general pandemic situation not examined here, and other specific measures taken together, lead to the sharp deterioration of the symptoms recognizable here. According to Bach and Bitterlich, the deterioration in mood is to be regarded exclusively because of psychosocial stress and other concrete measures. The increase in anxiety is attributed to patterns of experienced or anticipated negative experiences, which the pandemic and its measures have further exacerbated. (Bach et al., 2021) As a result, Bach and Bitterlich describe the Covid-19 pandemic as a 'global trauma'. However, it should be

noted here that depressive symptoms also have intrapsychic components and cannot be attributed exclusively to external factors.

In 86% of group 2, the pain, and psychosocial problems with 71.4% and the feelings of loneliness with 76.9% have intensified throughout the pandemic. This represents the most substantial increase in this symptomatology of all groups.

According to Arnold and colleagues, chronic pain results from the interplay of several etiological factors. Arnold et al. state that pain has a sensory, affective, cognitive, and functional dimension and develops in interpersonal relationships and behaviours in the human social environment. (Arnold et al. 2014)

Through withdrawal, gentle posture and negative anticipations, the pain intensifies, whereby the current everyday situation with the appropriate measures is a good breeding ground for a negative developmental spiral. The effects of these measures develop into a part of the pain experience. They must be empathetically conveyed to the patients through psychoeducational conversations to participate in their symptoms of anxiety and depression actively. Our results confirm the study results by Arnold et al. from 2014. (Arnold et al. 2014)

The restriction of social contacts and leisure activities was reported by 70% as symptom enhancement. However, it can be assumed that during the pandemic, the possibility of mental and physical reactivation was also limited. In summary, the pandemic and its measures have had a significant impact on this group's well-being and mental health.

In group 3, the impact of pandemic control measures has less impact on the worsening of symptoms in this group. This is particularly striking in comparison with diagnostic groups 1 and 2. Furthermore, in group 3, it is noticeable that the measures' closure of shops' (120% increase) and 'contact restriction' (109% increase) have triggered the most significant deterioration of the general symptoms in this group.

This indicates a substantial social withdrawal, combined with the absence of adequate support in the social context, which is an essential point of reference for this diagnostic group in dealing with their symptoms.

The question thus remains as to what economic impact the corona pandemic and its specific measures will have on public health. In conclusion to the results of this study, there are different effects on the investigated diagnostic groups. However, an overall increase in the expected costs for the health system must be assumed, as an increase in overall costs accompanies the recommendation towards interdisciplinary, multimodal therapy concepts. The effects on public health can thus be summarized as a cost increase for future multimodal therapy concepts.

5. Conclusions and limitations

The present study concludes that patients with pre-existing multiple diagnoses represent the most vulnerable group.

This is a more differentiated approach than in the previous research literature on this topic, in which data were collected and evaluated mainly for individual diagnoses.

The results of our study cannot be considered representative, as the totality of patients with 103 subjects must be considered too low. Nevertheless, the data available here can contribute to a topic that has so far been little studied.

As a result of the pandemic, there has been an increase in psychological stress in the general population.

This led to an increase or exacerbation of anxiety-related behaviors, symptoms, and mental disorders, especially among sensitive groups, which impacts society as a whole and continues to unsettle and weaken them in dealing with the pandemic. To counteract this, one goal should be to strengthen the resilience of the groups.

As we know from psycho neuro-immunological research, stressful situations, anxiety and depression are considered risk factors that suppress the immune system. It would be helpful to investigate further whether this also leads to an increased susceptibility to infections regarding SARS-COV 2, which is inevitably associated with more severe courses and puts an additional heavy burden on these highly vulnerable groups.

Our study also showed that specific measures to combat the pandemic were processed in different ways in the different diagnostic groups. This is due to the nature of the current diagnosis itself and the interaction of the multiple diagnoses. It would also be conceivable that pre-traumatized patients would be triggered by the corona measures in their experience of powerlessness, insecurity, loss of autonomy and thus lead to inflationary symptom worsening.

This results in specific implications for therapeutic work. Therefore, the overall impact of the measures ordered to combat the pandemic must be regarded as high overall and concerning the specific diagnostic group but differentiated.

The differentiation according to diagnostic groups forms the core of the authors' present study. The present research question: "What is the influence of certain pandemic control measures on patient groups with specific mental pre-existing conditions and the economic impact on public health?" can thus be considered fully answered.

Based on our results, specific interventions are necessary and sensible in order to do justice to the particularly vulnerable groups. We observed a highly significant deterioration in all groups with pre-existing multiple diagnoses, but also patients with single diagnoses show a dramatic deterioration of their condition with more than 60%. This makes it clear that a very thorough cost-benefit assessment of the ordered Corona measures is necessary with regard to mental health. Since we have to assume an overall increase in costs anyway, due to interdisciplinary, multimodal therapy concepts, which entails a considerable economic impact on the public health system.

In particular, people with complex complaint patterns need special adapted measures, as these groups experience persistent states of emergency - such as the measures currently ordered - more intensely than healthy people (Fatke et al. 2020) and are often in a persistent state of alarm. In our opinion, the need for an interdisciplinary multimodal approach (Kieselbach 2021) consisting of a combination of psychotherapeutic, medical, physiotherapeutic, and psychosocial interventions is the basis for adequate treatment concepts to break deadlocked cycles - as is already done in multimodal pain treatment.

Appendix

The data for the present study can be accessed at the following link in the Harvard Dataverse:

<https://doi.org/10.7910/DVN/W3KJEM>

- SPSS project file
- CITAVI project file
- Survey questionnaires 1 to 4

References

- Arnold, B.; Brinkschmidt, T.; Casser, H-R; Diezemann, A.; Gralow, I.; Irnich, D. et al. (2014): Multimodale Schmerztherapie für die Behandlung chronischer Schmerzsyndrome. Ein Konsensuspapier der Ad-hoc-Kommission Multimodale interdisziplinäre Schmerztherapie der Deutschen Schmerzgesellschaft zu den Behandlungsinhalten. In: *Schmerz (Berlin, Germany)* 28 (5), S. 459–472. DOI: 10.1007/s00482-014-1471-x.
- Bach, Michael; Bitterlich, Waltraud (2021): COVID-19 und Traumafolgesymptome: repräsentative Daten aus Österreich. In: *psychopraxis. neuropraxis* 24 (5), S. 299–303. DOI: 10.1007/s00739-021-00748-7.
- Bühner, Markus; Ziegler, Matthias (2009): Statistik für Psychologen und Sozialwissenschaftler. München: Pearson Studium (ps Psychologie). Online verfügbar unter <http://lib.myilibrary.com?id=404927>.
- Fatke, Bastian; Hölzle, Patricia; Frank, Andreas; Förstl, Hans (2020): Psychische Probleme in der Pandemie – Beobachtungen während der COVID-19-Krise. In: *Deutsche medizinische Wochenschrift (1946)* 145 (10), S. 675–681. DOI: 10.1055/a-1147-2889.
- Funck, Monika: DGS-PM_Covid_Schmerz-Palliativtag_2021_Online_15.03.2021.
- Hao, Fengyi; Tan, Wanqiu; Jiang, Li; Zhang, Ling; Zhao, Xinling; Zou, Yiran et al. (2020): Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and Lockdown? A case-control study with service and research implications for immunopsychiatry. In: *Brain, behavior, and immunity* 87, S. 100–106. DOI: 10.1016/J.bbi.2020.04.069.
- Huang, Yeen; Zhao, Ning (2020): Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. In: *Psychiatry research* 288, S. 112954. DOI: 10.1016/j.psychres.2020.112954.
- Kieselbach, Kristin (2021): Multimodale Schmerztherapie. Ein Praxislehrbuch. Unter Mitarbeit von Stefan Wirz, Michael Schenk, Evren Atabas, Eva Bartmann, Fritjoff Bock, Andreas Böger et al. 1st ed. Stuttgart: Kohlhammer Verlag. Online verfügbar unter <https://ebookcentral.proquest.com/lib/kxp/detail.action?docID=6821689>.
- Kogler, A., Kogler, L. Schrunner, m. et. al.: Auswirkungen der Covid-19-Maßnahmen auf Personen mit psychischen Störungen. In: *Institut für Psychosomatik und Verhaltenstherapie, Alberstraße 15, 8010 Graz* 2021. Online verfügbar unter <https://institut-avm.at/wp-content/uploads/2021/03/kogler-a-kogler-l-schrunner-m-dietmaier-g-muller-i-ldurchgang-coronastudie.pdf>.
- Özgör, Lamia (2021): Wie erleben Personen mit psychischen Erkrankungen die Corona-Pandemie? In: *Der Neurologe & Psychiater* 22 (1), S. 6–7. DOI: 10.1007/s15202-021-4632-7.
- Pfefferbaum, Betty; North, Carol S. (2020): Mental Health and the Covid-19 Pandemic. In: *The New England journal of medicine* 383 (6), S. 510–512. DOI: 10.1056/NEJMp2008017.
- Quervain, Dominique de; Aerni, Amanda; Amini, Ehssan; Bentz, Dorothée; Coyne, David; Gerhards, Christiane et al. (2020): The Swiss Corona Stress Study.
- Strauß, Bernhard; Berger, Uwe; Rosendahl, Jenny (2021): Folgen der COVID-19-

Pandemie für die psychische Gesundheit und Konsequenzen für die Psychotherapie – Teil 1 einer (vorläufigen) Übersicht. In: *Psychotherapeut*, S. 1–10. DOI: 10.1007/s00278-021-00504-7.

Weltgesundheitsorganisation (1999): Internationale Klassifikation psychischer Störungen. ICD-10, Kapitel V (F) ; klinisch-diagnostische Leitlinien. 3. Aufl., unveränd. nach der 2., korrigierten und bearb. Aufl. 1993. Bern: Huber.

Winkler, Johanna G.; Jalilzadeh Masah, Dario; Moran, James Kenneth; Bretz, Joachim; Tsagkas, Ioannis; Goldschmidt, Thomas; Schouler-Ocak, Meryam (2021): Psychische Belastung während der COVID-19-Pandemie: Konsequenzen für psychiatrisch Erkrankte und therapeutische Implikationen. In: *Der Nervenarzt* 92 (3), S. 243–251. DOI: 10.1007/s00115-020-01056-y.