

MENTAL HEALTH BEFORE AND AFTER COVID-19 LOCKDOWN

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Abstract

This study examined about the mental health of students before and after covid-19 lockdown. The lockdown due to coronavirus pandemic may have worsened the mental health problems. But to what degree mental health may be affected by social isolation is still unknown. We collected data on students' mental health in two instances: (i) in October and December 2019, and (ii) 6 months later in April 2020 during the covid-19 lockdown in India and after lifting the lockdown in India. A total of 350 students aged 18-24 completed the questionnaires. We applied multiple regression models to indicate any changes in the questionnaire scores during and after lockdown. Students reported an average worse depression symptom during lockdown than 6 months before isolation. The regression models predict that 88% of students would not experience a clinically significant worsening symptoms, while approximately 5% of our target population could develop more severe depressive symptoms. This study supports the view that mental depression can elevate during lockdown but also highlights that lifting of lockdown can vanish the rise of mental depression.

Keywords: Health, Lockdown, Students, management

Introduction

The current coronavirus pandemic has been affecting countries all over the world since march 2020, forcing the governments all over the world to put all the citizens into lockdown. This lockdown resulted in social isolation of students which resulted in growing concerns of the effects of isolation on mental health on students, and recommendations for mental health support during pandemic, mostly cross-sectional data or data from previous pandemics are available to assess if and to what degree mental health problems might worsen. The cited studies evidenced an increase in symptoms

of psychological distress, depressive and anxiety symptoms, or sleep disturbances in the general population. To the best of our knowledge, few prospective studies that take into consideration mental, health problems before and after lockdown have been published so far. These longitudinal studies highlighted a possible increase in the depressive and anxiety symptoms, as well as sleep disturbances, during lockdown with respect to baseline condition assessed before restrictive measures were put in place. We used inventories for the assessment of depressive, anxiety, obsessive-compulsive and eating disorder symptoms, with the aim of providing prospective evidence of changes in the mental health of Indian students during covid-19 lockdown and after its lifting, with respect to a baseline condition assessed before the imposition of lockdown.

Methods Study cohort

All the procedure used in the above research are ethically approved and all the participants provided us with written consent. Recruitment took place in DELHI. Here lies one of the most prestigious university of Asia i.e. DELHI UNIVERSITY. The students were handed out a card containing a URL. By assessing the URL the students could provide their informed consent and participate on the research. Every six months the participants would be automatically notified via e-mail that they could take part in another data collection. Among these students, 337 students accepted to participate in the study, and 167 students matched the target population characteristics (aged 18-24). A second introduction of the study was delivered with the same procedure as described above between November 11 and December 19 to approximately 1200 students. Among these students 400 accepted to participate in the study, 183 students among these matched the aforementioned criteria and completed the questionnaire both in November-December and second time between May and June, that is after lifting of lockdown. With this method, we obtained two samples from the same population: one sample completed the questionnaires before lockdown and the other one after lockdown. Students that participated in the study are currently enrolled in DELHI UNIVERSITY across different colleges.

Statistical analysis

In the questionnaire we used Beck Depression Inventory-2 (BDI-2), the Beck Anxiety Inventory (BAI), the Obsessive-Compulsive Inventory-Revised (OCI-R), the Eating Habits Questionnaire (EHQ) and the Eating Disorder Inventory – 3 (EDI-3).

Unless otherwise specified, we applied a paired comparison approach to analyse this data set. To select the best regression model, the models were compared using the anova function and the model with the lowest AIC was selected. We thus evaluated the contribution of each independent variable (i.e. lockdown phases, sex, and history of a mental disorder) to the changes in scores by considering the significance of each β regression coefficient estimate. For instance, let us assume that model $n+1$ describes the BDI-2 score based on the values of two independent variables, sex and lockdown phases, whereas model n describes the BDI-2 score based solely on the participants' sex. Model $n+1$ is considered to be better than model n if it can reduce the residual variance of the data taken into consideration; in the specific case, if lockdown phases (the only extra term in model $n+1$) significantly change (reduce or increase) BDI-2 scores. The β regression coefficient estimates describe the effect of each value of an independent variable on the score. We undertook a step-wise approach for the modelling and analysis of the data presented herein: we evaluated the contribution of each relevant independent variable to the model and kept the variables that significantly

improved the model. Sample characteristics and regression models were reported in TABLE 1 and TABLE 2 respectively.

Results

Lockdown effects on depressive symptomatology: The Beck Depression Inventory-2 median score was significantly higher during lockdown than before the imposition of lockdown. The median increase was higher in females than in males, although the difference is not statistically

significant (i.e. the factor “sex” does not significantly improve the regression model). However, a model considering the interaction between history of a mental disorder and lockdown phases as predictors of change in the BDI-2 score is better than a model with only lockdown phases as a predictor: this suggests that students without an established diagnosis of psychopathology experienced a significant increase in depressive symptoms during lockdown, an effect not seen for students with a mental disorder history. The increase in depressive symptomatology is not significantly associated with familiarity for a mental disorder, worry for one's economic situation, or residence.

Lockdown effects on anxiety, obsessive, and disordered eating symptomatology: Anxiety symptoms, as measured by the Beck Anxiety Inventory (BAI), were influenced by the lockdown. Specifically, we show that the BAI scores decreased after the lifting of lockdown, even though no increase was evident during lockdown. This reduction in anxiety symptoms was significantly greater in males than in females, although present in both sexes, but it was significant only for students without a history of mental disorder. A trend in the reduction of the BAI scores could be detected for students who reported a diagnosed psychopathological condition, but this trend was not significant. Similarly to the BAI scores, also the OCI-R scores, which assess obsessions and compulsions, were reduced after lockdown, but, in this case, the reduction was independent of a mental disorder history or the participant's sex.

Concerning eating disorder symptoms, we assessed whether students' eating habits may have been influenced by the lockdown through the EDI-3 subscales (Eating Disorder Risk and General Psychological Maladjustment) and the EHQ questionnaires. In this regard, the Eating Disorder Risk scale scores were not altered in the majority of our sample, except for students who reported a history of eating disorders (namely Anorexia Nervosa, Bulimia Nervosa and/or Binge Eating Disorder): this specific subsample showed an increase in eating disorder symptomatology after lockdown. The General Psychological Maladjustment and the Eating Habits Questionnaire did not evidence any changes in the severity of the constructs they measure during or after lockdown.

Discussion

Among the growing concerns of detrimental effects of lockdown on mental health, very few prospective studies are available to provide support for any actual changes. In this prospective study, we show that students were affected by social isolation to varying degrees independently of sex: the lockdown seemed to be responsible for a 2-point median increase in the BDI-2 score, that is, students were more likely to experience a worsening in the depressive symptomatology during lockdown. However, this increase was not clinically relevant for 87% of our target population. On the other hand, our models predict that approximately 5% of students would experience a clinically significant worsening of depressive symptoms during lockdown. Nevertheless, after

lockdown, depressive symptomatology was again comparable to that before lockdown. This indicates that a period of approximately 7 weeks of lockdown exerted a burden on students' depressive symptoms, but as the lockdown was lifted this effect quickly vanished. We also investigated whether other mental health problems could be exacerbated or aggravated by the imposition of lockdown: anxiety symptoms, as measured by the Beck Anxiety Inventory, and obsessive-compulsive symptoms, as measured by the Obsessive Compulsive Inventory – Revised, were not affected by lockdown. In contrast, we report a significant reduction of the scores after the lifting of lockdown. Moreover,

lockdown did not affect eating disorder symptoms, measured by the Eating Habits Questionnaire and the Eating Disorder Inventory-3; the only students who reported experiencing an increase in the symptomatology are those with a history of eating disorder.

Conclusion

This study highlights that different symptom related to mental health problems may be differently affected by lockdown, with obsessive-compulsive and anxiety symptoms being reduced after the lifting of lockdown and eating disorder symptoms not being much affected. Only the Beck Depression Inventory – 2 score is significantly increased during lockdown, and this probably mirrors a real increase in depressive symptoms, as previously reported. Furthermore, not all students reported an increase in depressive symptoms: we evidence that the most affected students are those with no mental disorder history. The main strength of this study is the report of participants' psychological conditions before lockdown and the assessment of various mental health dimensions through the compilation of validated questionnaires. However, it should be taken into consideration that self-reporting questionnaires are not diagnostic instruments, and thus they might not detect relevant changes in the mental health of participating subjects. Moreover, our findings might not reflect the general population's well-being, as our investigation specifically deals with the mental health of the student population. Due to the heterogeneity of the measures adopted by different research groups, and the different populations studied to assess the consequences of restrictive measures on mental health, it would be possible to identify lockdown as a cause of the worsening of depressive symptoms only after extensive prospective evidence or international collaborations.

However, we wish to emphasise that it is extremely difficult to control for possible confounders such as: economic uncertainty or socio-economic status, which have been thoroughly described as factors involved in common mental health problems; other consequences of lockdown, such as the reduction in physical activity, the fear of being infected, or other relevant biological or physical health-related factors independent from infection. Furthermore, whether multiple lockdowns might cause a worsening of symptoms, or whether a sort of “habituation” might take place, is still an open question. Until sufficient and properly-controlled data is available, the media and researchers should refrain from linking lockdown to disastrous psychological consequences, the depiction of which could be more damaging than lockdown *per se*. In conclusion, mental health workers should cautiously consider a possible aggravation of depressive symptoms in students during lockdown phases, independently from a history of mental disorder.

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