Impact of the UK lockdown on people at risk of COPD

Received: 11 June 2021
Accepted: 29 Sept 2021

To the Editor:

On 23 March 2020, the UK Government announced a nationwide lockdown in response to the COVID-19 epidemic, with people banned from leaving their homes except for essential journeys and exercise.

From the beginning, public health advice issued by the UK National Health Service (NHS) encouraged smokers to quit. This advice was based on studies that showed a five times greater risk infection of the respiratory tract by the influenza virus in smokers and that bacterial infection/pneumonia is twice as likely in those who smoke [1, 2]. Early data during the pandemic were inconclusive as to whether tobacco smoking or nicotine conferred increased susceptibility to COVID-19 infection or not, but infected smokers had poorer clinical outcomes [3].

Whether people living in the UK took the public health advice is unclear as mass survey data are contradictory. One early cross-sectional survey suggested that 12.2% of those who tried to quit in the 3 months prior to March 2020 were motivated by COVID-19 but this was not statistically tested [4]. Data from another survey during April 2020 showed no significant change in smoking behaviour, with 15.9% of people sampled smoking in the year prior to February 2020 compared to 17.0% of people surveyed in April 2020 [5], whilst another survey suggested that smokers were stress-smoking more since the pandemic [6]. Our aim was to describe smoking and other behaviours during a nationwide lockdown.

Participants enrolled in the British Lung Foundation Early COPD cohort were aged 30–45 years, current tobacco smokers with >10-pack-year smoking history, forced expiratory volume in 1 s (FEV_1) ⩾80% predicted and a body mass index <35 $kg \cdot m^{-2}$. They were scheduled to be seen face-to-face in clinic every 6 months for measurement of full lung function, completion of various questionnaires, and physical collection of blood and sputum samples, but during lockdown, telephone interviews were performed and written questionnaires returned as photographs attached to e-mails. Remote interviews took place between 16 April and 28 September 2020, and paired with the closest pre-pandemic visit.

By telephone, participants were asked about smoking habits, upper respiratory tract infection (URTIs) and lower respiratory tract infections (LRTIs). They were also sent the COPD Assessment Test (CAT), Leicester Cough Questionnaire, Hospital Anxiety and Depression Scale questionnaire, and questions 1 and 2 of the St George's Respiratory Questionnaire (SGRQ) for diagnoses of chronic bronchitis [7, 8]. 27 participants did not return the questionnaires. Statistical comparisons were made by paired t-test or Wilcoxon matched pairs test; comparisons between groups were made by Mann–Whitney and Chi-squared tests as appropriate. Remote telephone visits were approved by a nonsubstantial amendment to the ethics approval (London-Riverside Research Ethics Committee, 16LO2041).

Data were obtained during lockdown between the 16 April and 25 September 2020 from 260 individuals (25 participants in Belfast, 38 in Birmingham, 25 in Edinburgh, 101 in London, 27 in Manchester and 44 in Nottingham). The mean±SD age was 38.1±4.6 years (n=259), 155 (59.6%) were male and the post-bronchodilator FEV_1 at enrolment was 3.81±0.8 L (101±11% of Global Lung Function Initiative predicted). The interval between the two visits was 196 days (interquartile range (IQR) 80–238 days).

Figure 1 demonstrates that during lockdown, the proportion of participants recorded as having stopped smoking for at least a week doubled from 31 (12.0%) out of 259 prior to lockdown to 62 (23.9%) out of 259 (Chi-squared p<0.001) during lockdown. Smoking habit data were available at both visits for 258 participants; 40 had stopped, nine restarted and 209 participant's habits were unchanged. Of these 209,

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Cite this article as: Donaldson GC, Ritchie AI, Calverley PMA, *et al*. Impact of the UK lockdown on people at risk of COPD. *ERJ Open Res* 2021; 7: 00358-2021 [DOI: 10.1183/23120541.00358-2021].

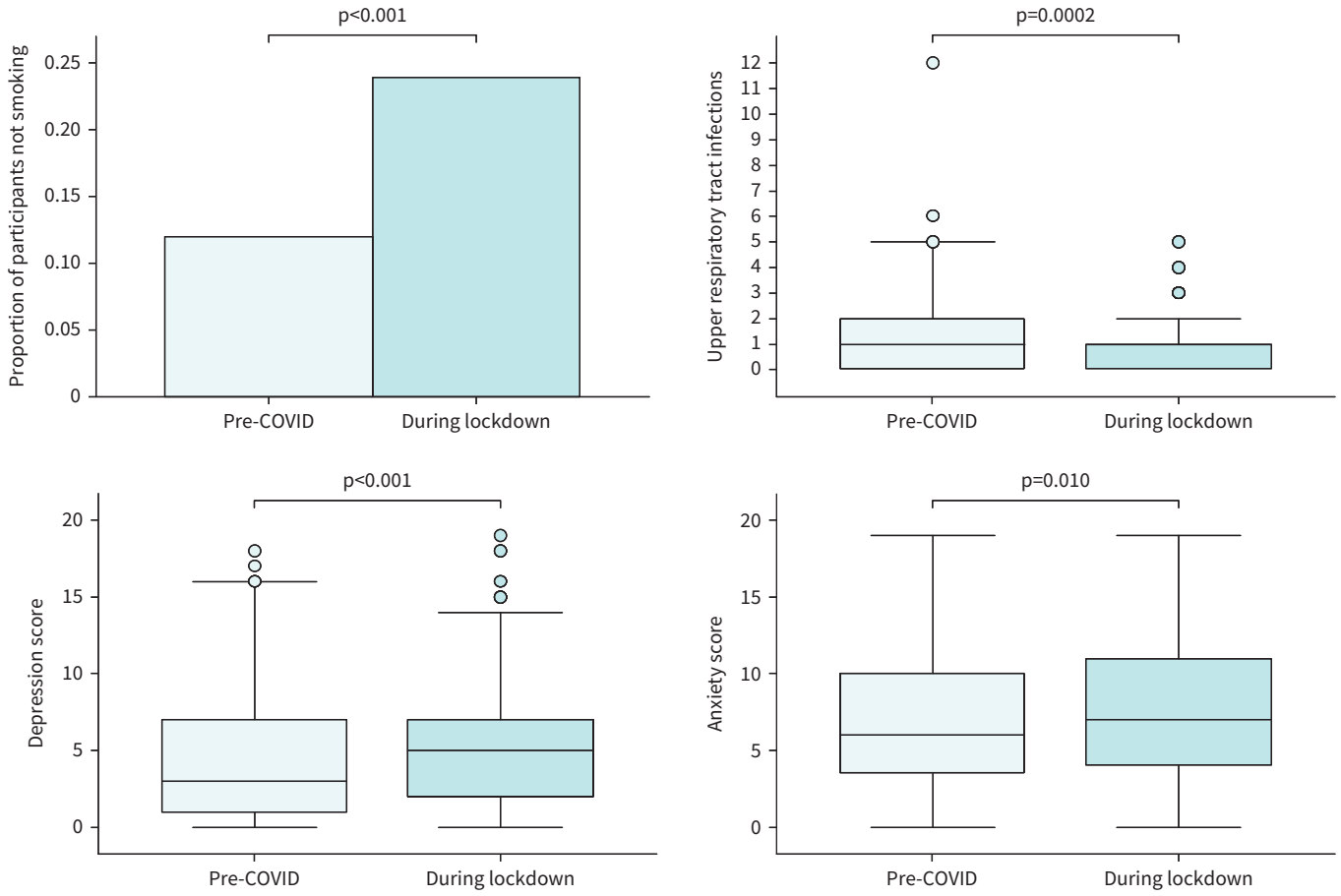

FIGURE 1 The proportion of nonsmoking participants, frequency of upper respiratory tract infections, and depression and anxiety scores before and during lockdown in the UK during the COVID-19 pandemic.

187 continued to smoke and 22 had already quit. In those who smoked before and during lockdown, assessed over the 7 days preceding each visit, tobacco consumption (cigarettes per day; Wilcoxon p = 0.587) and rolling tobacco (grams per week; Wilcoxon p = 0.924) was unchanged.

During lockdown, the anxiety component scores increased from 6.7±4.4 to 7.4±4.7) (n = 233; t-test p = 0.010) and depression scores increased from 4.30±3.9 to 5.14±4.1) (n = 233; t-test p<0.001). Anxiety increased in 78 out of 233 and depression in 89 out of 233 participants by ⩾2 units, the minimally important difference in COPD [9].

Respiratory symptoms improved during lockdown, with CAT scores falling from 9 (IQR 6–15) to 8 (IQR 5–13) (n = 233; Wilcoxon p = 0.008) and the total Leicester Cough Questionnaire score indicating improvement, as it increased from 19.7 (IQR 17.6–20.6) to 20.0 (IQR 18.7–20.8) (n = 204; Wilcoxon p = 0.045).

A comparison of the 40 patients who quit during lockdown with those 187 who smoked at both visits showed no difference prior to lock down in CAT scores (Mann–Whitney p = 0.814) or in the prevalence of chronic as bronchitis defined by the SGRQ (Chi-squared p = 0.607). However, after quitting, CAT scores were lower (5 (IQR 3–13) compared with 9 (IQR 6–13)) in smokers (Mann–Whitney p = 0.0307) and chronic bronchitis less prevalent (four (11.8%) out of 34) than in those who continued to smoke (47 (28.1%) out of 167) (Chi-squared p = 0.045).

The number of URTIs recalled by the participants fell from a median of 1 (IQR 0–2; group mean 1.24) when asked pre-pandemic to a median 1 (IQR 0–1; group mean 0.84) (Wilcoxon p = 0.0002) when asked during lockdown. There was no difference in the number of LRTIs (Wilcoxon p = 0.192).

In summary, during the UK national lockdown and a period of enforced social distancing, there was a significant increase in the proportion of 30–45-year-old smokers who quit smoking despite increased levels of depression and anxiety. It has been reported that depressed individuals are more likely to be nicotine dependent but paradoxically, older depressed adults coupled with health concerns are more motivated to quit [10]. Stress may have enhanced lockdown as an important moment at which to quit. One limitation in our study is the absence of objective measures of nicotine use. However, participants who self-reported that they had quit smoking had a reduced prevalence of chronic bronchitis and lower CAT scores, which suggests they were truthful about their habits. There was also a reduced number of URTIs, again suggestive that participants had fewer social interactions and opportunities for cross-infection.

Our findings suggest that any evaluation of the health response to the pandemic needs to balance deterioration in mental health in specific age groups with improvements in respiratory health.

Gavin C. Donaldson[1], Andrew I. Ritchie[1], Peter M.A. Calverley[2], Jorgen Vestbo[3], Malin Fageras[4], Alberto de la Hoz[5], Enrica Bucchioni[6], Chris H. Compton[7], Karen Mezzi[8] and Jadwiga A. Wedzicha[1] on behalf of the BLF Early COPD Partnership

[1]National Heart and Lung Institute, Imperial College London, London, UK. [2]University Hospital Aintree, University of Liverpool, Liverpool, UK. [3]Division of Infection, Immunity and Respiratory Medicine, University of Manchester, Manchester, UK. [4]Astra-Zeneca, Gothenburg, Sweden. [5]Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany. [6]Chiesi, Parma, Italy. [7]GSK, Brentford, UK. [8]Novartis Pharma AG, Basel, Switzerland.

Corresponding author: Gavin C. Donaldson (gavin.donaldson@imperial.ac.uk)

Provenance: Submitted article, peer reviewed.

BLF Early COPD Partnership: G.C. Donaldson, A.I. Ritchie, F. McLean, L. Moreira (both Imperial College London, London, UK), B. King (University of Belfast, Belfast, UK), K.P. Yip (University of Birmingham, Birmingham, UK), A.S. Beech, A. Bikov (both University of Manchester, Manchester, UK), S. Ferguson (University of Edinburgh, Edinburgh, UK), C.W. Kong (University of Southhampton, Southampton, UK), C. Holmes (University of Manchester, Manchester, UK), A.R. Jenkins (University of Nottingham, Nottingham, UK), A. Deans (University of Edinburgh, Edinburgh, UK), M. Fageras, A. de la Hoz, E. Bucchioni, C. Compton, A. Hamblin, A. Mackay (AstraZeneca), M. Kots (Chiesi), K. Mezzi, D. Mohan (GSK), I. Bottoli (Novartis), I. Jarrod, N.Snell (both British Heart Foundation, London, UK), E. Hoffman, J. Atha (both University of Iowa, Iowa City, IA, USA), J. Allinson (Imperial College London, London, UK), C.E. Bolton (University of Nottingham, Nottingham, UK), P.M.A. Calverley, G. Choudhury (University of Edinburgh, Edinburgh, UK), L. McGarvey (University of Belfast, Belfast, UK), E. Sapey (University of Birmingham, Birmingham, UK), T.M.A. Wilkinson (University of Southampton, Southampton, UK), J. Vestbo and J.A. Wedzicha.

Conflict of interest: G.C. Donaldson reports grants from AstraZeneca, and personal fees from AstraZeneca, the American Thoracic Society, FWO Flanders and Novartis, outside the submitted work. A.I. Ritchie has nothing to disclose. P.M.A. Calverley reports grants and personal fees from GlaxoSmithKline, personal fees from AstraZeneca, Boehringer Ingelheim, Phillips Respironics, Novartis, Recipharm and Zambon, and personal fees and nonfinancial support from Boehringer Ingelheim outside the submitted work. J. Vestbo reports personal fees from AstraZeneca and Boehringer Ingelheim, grants from Boehringer Ingelheim, and personal fees from Chiesi, GSK, Novartis and TEVA, outside the submitted work. M. Fageras has nothing to disclose. A. de la Hoz reports a salary from Boehringer Ingelheim International. E. Bucchioni is an employee of Chiesi. C.H. Compton is an employee of and holds shares in GSK. K. Mezzi is a Novartis Pharma AG employee. J.A. Wedzicha reports grants from GSK, meeting expenses only (no personal fees since January 2015) from Novartis, Boehringer Ingelheim and AstraZeneca, and a grant from Chiesi outside the submitted work.

Support statement: The study is funded by AstraZeneca, Boehringer Ingelheim, Cheisi, GSK and Novartis. Funding information for this article has been deposited with the Crossref Funder Registry.

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