Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Diabetes & Metabolic Syndrome: Clinical Research & Reviews 14 (2020) 2241–2243

Contents lists available at ScienceDirect

Diabetes & Metabolic Syndrome: Clinical Research & Reviews

journal homepage: www.elsevier.com/locate/dsx

COVID-19, ethnicity and cardiometabolic disease self-management in UK primary care

Keywords:
COVID-19
Ethnic minority health
Cardiometabolic disease
Disease selfmanagement

Cardiometabolic diseases (e.g. cardiovascular disease, diabetes, hypertension, chronic kidney disease) are the most prevalent chronic conditions globally and often co-occur (termed cardiometabolic multimorbidity), driving mortality [1]. Recent evidence highlights that pre-existing cardiometabolic comorbidities and poorly controlled cardiovascular risk factors are associated with adverse clinical outcomes among COVID-19 patients [2]. Cardiometabolic diseases are also significantly more prevalent in COVID-19 patients than other chronic conditions such as cancer or chronic obstructive pulmonary disease (10–23% vs 2–3%) [3]. Individuals with cardiometabolic disease are also at significantly elevated risk for COVID-19 related outcomes, including hospitalisation and death [4]. Additionally, individuals from ethnic minority backgrounds, particularly those from Black and South Asian populations, are at significantly greater risk of both COVID-19 infection and death, even after accounting for relevant socioeconomic factors which is partly driven by the increased cardiometabolic disease risk seen in these populations [5]. Furthermore, obesity and central adiposity, which are disproportionately common amongst Black and South Asian populations respectively [6], drive adverse COVID-19 outcomes and mortality [7]. Consequentially, individuals from Black and South Asian backgrounds with pre-existing cardiometabolic disease and/or obesity represent an extremely vulnerable population with regards to adverse COVID-19-related outcomes. Furthermore, COVID-19 has had a profoundly negative impact on mental health due to elevated stress, depression and social isolation [8], which may also disproportionately affect those from ethnic minority communities [9] and worsen multimorbidity-related health outcomes in the long-term [10].

Ongoing management of cardiometabolic disease including sufficient risk factor control and mental health support is vital to minimise this risk, particularly in ethnic minority groups. However, the COVID-19 pandemic has resulted in a dramatic shift of attention and resources away from chronic disease management, and has caused a huge disruption in routine NHS care for patients with chronic disease. Additionally, risk factor control may have been directly affected during COVID-19-related restrictions due to factors such worsened medication adherence [11], impacted lifestyle behaviours including reduced physical activity, increased sedentary time and altered nutritional habits [12], and disrupted sleep [13]. This is particularly pertinent for ethnic minority populations, who typically already display reduced physical activity levels [14]. Previous research from national disaster-events has highlighted that poor disease risk factor control during the disaster is associated with significantly worse long-term health outcomes [15]. Socioeconomic deprivation, which has been profoundly negatively impacted by COVID-related restrictions, is also more common in ethnic minority populations, driving healthcare access inequalities and increasing COVID-related mortality [16]. New pathways for prospective cardiometabolic risk factor control are therefore urgently required, not only for minimising cardiovascular disease-associated risk related to a possible second spike in COVID-19 infection rates [2], but also for preventing adverse long-term outcomes associated with poor risk factor control during the COVID/post-COVID-era [15].

As such, there is a vital need to implement novel methods of supporting risk factor control and mental health for those with cardiometabolic multimorbidity in the COVID/post-COVID era, particularly for ethnic minority populations who display extremely high risk. Disease self-management (DSM) whereby the person is empowered to manage all or parts of their routine care in combination with shared decision-making supported by an integrated multidisciplinary care team, provides a promising avenue to address this need. DSM has demonstrated clinical and cost-effectiveness in chronic disease [17], and can be implemented in a COVID-resilient manner using virtual platforms and support [18]. Typically, UK health-promoting services or interventions are not translated for ethnic minority populations, which strengthens pre-existing health inequalities. In order to be effective, DSM education programmes and support must be not only translated appropriately for UK ethnic minority populations, but also culturally-adapted from the ground-up to ensure that they are suitable in the cultural, social and religious context of the target population.

The recent evidence concerning excess COVID-related risk in those both with pre-existing cardiometabolic conditions and those from UK ethnic minority communities has driven a large amount of research to be undertaken concerning possible underlying causes, factors associated with increased infection and adverse outcome risk, and impact on mental health. However, COVID-19 has resulted in a significant disruption in routine chronic disease care, particularly diabetes and cardiovascular disease, due to resource shift towards COVID-19 prevention or treatment, the difficulty in maintaining routine care with adequate social distancing, and impacted mental health [19]. Therefore, investigating new

https://doi.org/10.1016/j.dsx.2020.11.013

approaches to delivering routine chronic disease management in a COVID-resilient manner is crucial for the prevention of a severe detriment to future chronic disease outcomes [20]. However, to our knowledge there are no studies to date concerning specific COVID-resilient adaptation of DSM programmes to improve long-term physical and mental health outcomes. There is therefore an urgent need for such data, and exemplars from both within the UK and around the world upon which to base future models of care, particularly for minority ethnic health groups. Furthermore, a general reduction in the maintenance of adequate cardiometabolic risk factor control due to COVID-19 would result in significantly increased healthcare utilisation and costs, further straining already financially-pressured healthcare systems.

We therefore recommend the following care priorities with regards to the management of the UK cardiometabolic disease population:

1. Stratify patients based on adverse long-term and COVID-related outcome risk in order to prioritise the review of the most at-risk patients during the COVID/post-COVID era.
2. Incorporate culturally-tailored COVID-resilient DSM programmes and shared decision-making in order to support chronic disease management (e.g. medication optimisation and adherence, nutritional habits, physical activity levels) whilst minimising healthcare burden.
3. Ensure patients with cardiometabolic disease are aware of and understand potential alterations in treatment and lifestyle recommendations in the case of COVID-19 infection, such as potential medication alterations (e.g. insulin or ACE-inhibitors) and the need to maintain adequate hydration.
4. Support the mental health of those with cardiometabolic disease, as poor mental health can profoundly impact other disease management and lifestyle factors, for instance medication adherence and physical activity.
5. Ensure the completion of regular patient reviews (virtually or otherwise) to support patients to manage their own conditions, identify issues as they arise and foster long-term behaviour change.

These steps are vital, particularly in ethnic minority populations, in order to minimise the potential for excess deaths related to COVID-19 and future long-term adverse health outcomes, and further UK healthcare system strain.

Declaration of competing interest

Professor Khunti is the national lead for the NIHR ARC multimorbidity theme. Professor Davies reports grants from Novo Nordisk, non-financial support from the NIHR Leicester Biomedical Research Centre, during the conduct of the study; personal fees from Novo Nordisk, personal fees from Sanofi-Aventis, personal fees from Lilly, personal fees from Merck Sharp & Dohme, personal fees from Boehringer Ingelheim, personal fees from AstraZeneca, personal fees from Janssen, personal fees from Servier, personal fees from Gilead Sciences Ltd, personal fees from NAPP, personal fees from Mitsubishi Tanabe Pharma Corporation, personal fees from Takeda Pharmaceuticals International Inc., grants from Novo Nordisk, grants from Sanofi-Aventis, grants from Lilly, grants from Boehringer Ingelheim, grants from Astrazeneca, grants from Janssen, outside the submitted work. No other conflicts of interest are reported.

Acknowledgements

All authors are supported by the National Institute for Health Research (NIHR) Applied Research Collaboration East Midlands (ARC EM) and the NIHR Leicester Biomedical Research Centre (BRC). The views expressed are those of the author(s) and not necessarily those of the NIHR, NHS or the Department of Health and Social Care.

References

[1] Di Angelantonio E, Kaptoge S, Wormser D, Willeit P, Butterworth AS, Bansal N, et al. Association of cardiometabolic multimorbidity with mortality. Jama 2015;314(1):52–60.
[2] Sabatino J, De Rosa S, Di Salvo G, Indolfi C. Impact of cardiovascular risk profile on COVID-19 outcome. A meta-analysis. PloS One 2020;15(8):e0237131.
[3] Kumar Singh A, Gillies CL, Singh R, Singh A, Chudasama Y, Coles Bet al. Prevalence of comorbidities and their association with mortality in patients with COVID-19: a systematic review and meta-analysis. Diabetes Obes Metabol. doi: 10.1111/dom.14124.
[4] Roncon L, Zuin M, Rigatelli G, Zuliani G. Diabetic patients with COVID-19 infection are at higher risk of ICU admission and poor short-term outcome. J Clin Virol 2020:104354.
[5] Public Health England. Disparities in the risk and outcomes of COVID-19. 2020.
[6] Williams EP, Mesidor M, Winters K, Dubbert PM, Wyatt SB. Overweight and obesity: prevalence, consequences, and causes of a growing public health problem. Curr. Obes. Rep. 2015;4(3):363–70.
[7] Hamer M, Gale CR, Kivimäki M, Batty GD. Overweight, obesity, and risk of hospitalization for COVID-19: a community-based cohort study of adults in the United Kingdom. Proc Natl Acad Sci Unit States Am 2020;117(35):21011–3.
[8] Joensen L, Madsen K, Holm L, Nielsen KA, Rod MH, Petersen AA, et al. Diabetes and COVID-19: psychosocial consequences of the COVID-19 pandemic in people with diabetes in Denmark—what characterizes people with high levels of COVID-19-related worries? Diabet Med 2020;37(7):1146–54.
[9] Smith K, Bhui K, Cipriani A. COVID-19, mental health and ethnic minorities. Evid Base Ment Health 2020;23(3):89–90.
[10] Payne RA, Abel GA, Guthrie B, Mercer SW. The effect of physical multimorbidity, mental health conditions and socioeconomic deprivation on unplanned admissions to hospital: a retrospective cohort study. CMAJ (Can Med Assoc J) 2013;185(5):E221–8.
[11] Kretchy IA, Asiedu-Danso M, Kretchy J-P. Medication management and adherence during the COVID-19 pandemic: perspectives and experiences from LMICs. Research in social and administrative pharmacy. 2020. p. 2020.
[12] Lippi G, Henry B, Sanchis-Gomar F. Physical inactivity and cardiovascular disease at the time of coronavirus disease 2019 (COVID-19). Eur J Preven Cardiol 2020;2020(Apr 9). 2047487320916823.
[13] Altena E, Baglioni C, Espie CA, Ellis J, Gavriloff D, Holzinger B, et al. Dealing with sleep problems during home confinement due to the COVID-19 outbreak: practical recommendations from a task force of the European CBT-I Academy. J Sleep Res 2020:e13052.
[14] Crespo CJ, Smit E, Andersen RE, Carter-Pokras O, Ainsworth BE. Race/ethnicity, social class and their relation to physical inactivity during leisure time: results from the Third National Health and Nutrition Examination Survey, 1988–1994. Am J Prev Med 2000;18(1):46–53.
[15] Hartmann-Boyce J, Morris E, Goyder C, Kinton J, Perring J, Nunan D, et al. Diabetes and COVID-19: risks, management, and learnings from other national disasters. Diabetes Care 2020;43(8):1695–703.
[16] Prats-Uribe A, Paredes R, Prieto-Alhambra D. Ethnicity, comorbidity, socioeconomic status, and their associations with COVID-19 infection in England: a cohort analysis of UK Biobank data. medRxiv; 2020. https://doi.org/10.1101/2020.05.06.20092676.
[17] Davies MJ, D'Alessio DA, Fradkin J, Kernan WN, Mathieu C, Mingrone G, et al. Management of hyperglycaemia in type 2 diabetes, 2018. A consensus report by the American diabetes association (ADA) and the European association for the study of diabetes (EASD). Diabetologia 2018;61(12):2461–98.
[18] Hadjiconstantinou M, Schreder S, Brough C, Northern A, Stribling B, Khunti K, et al. Using intervention Mapping to develop a digital self-management program for people with type 2 diabetes: tutorial on MyDESMOND. J Med Internet Res 2020;22(5):e17316.
[19] Chudasama YV, Gillies CL, Zaccardi F, Coles B, Davies MJ, Seidu S, et al. Impact of COVID-19 on routine care for chronic diseases: a global survey of views from healthcare professionals. Diabetes Metab Syndrome 2020;14(5):965–7.
[20] Banerjee A, Pasea L, Harris S, Gonzalez-Izquierdo A, Torralbo A, Shallcross L, et al. Estimating excess 1-year mortality associated with the COVID-19 pandemic according to underlying conditions and age: a population-based cohort study. Lancet 2020;395(10238):1715–25.

Patrick J. Highton*, Michelle Hadjiconstantinou
Diabetes Research Centre, University of Leicester, Leicester General Hospital, Leicester, LE5 4PW, UK

Sally Schreder
Leicester Diabetes Centre, University Hospitals of Leicester NHS Trust, Leicester General Hospital, Leicester, LE5 4PW, UK

Sam Seidu, Melanie Davies, Kamlesh Khunti
Diabetes Research Centre, University of Leicester, Leicester General Hospital, Leicester, LE5 4PW, UK

* Corresponding author. Diabetes Research Centre, University of Leicester, Leicester General Hospital, Leicester, LE5 4PW, UK.
E-mail address: ph204@le.ac.uk (P.J. Highton).

6 October 2020