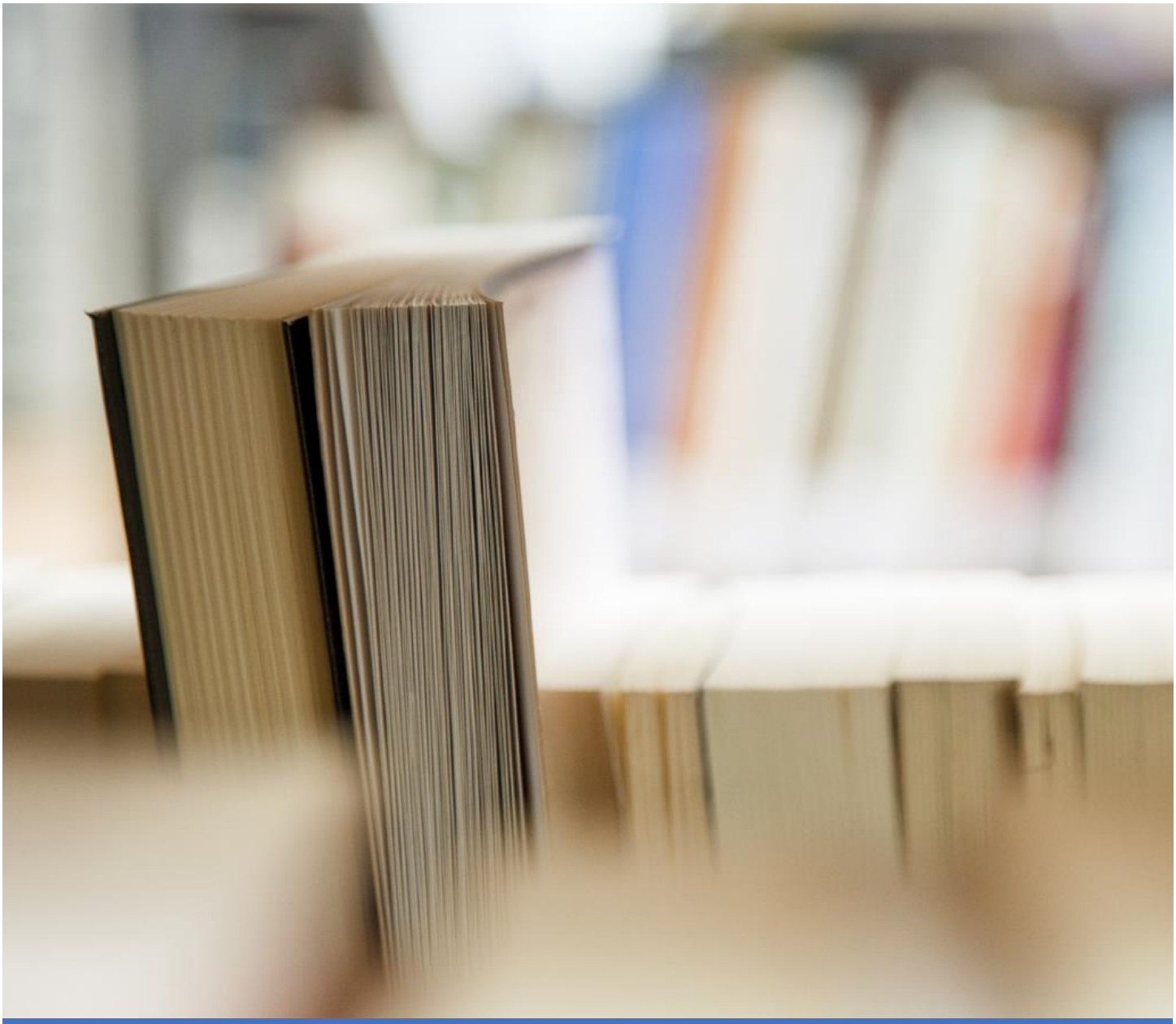

Research Project: Literature review, Obesity and Covid - 19

Introduction to Research – BMHP5005

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ABSTRACT

The following literature review is designed to outline the risk of obesity among COVID-19 patients. Obesity is a body mass index of 30 or higher, according to National Health Services (2019), Currently affecting one in four adults and one in five children in the UK. COVID - 19 is a highly contagious disease discovered in China, Wuhan, in December 2019, which affects the lungs and respiratory system. According to Muscogiuri et al. (2020), people at risk of severe forms of COVID - 19 if infected are elderly, people with an underlying health condition and obese.

Methodology and methods will be defined and discussed, such as research methods qualitative and quantitative, as well as advantages and disadvantages of using qualitative and quantitative data. According to Efron and Ravid (2019), the literature review is a critical recap of what has already been researched on a topic area. Myers (2019) suggested that ethical considerations are vital in any type of research as there are certain rules to be followed, including the golden rule, honesty, plagiarism, informed consent and permission to publish.

The literature review findings and discussion chapter will share numerous research on obesity and COVID-19, as well as risks factors causing obesity and why obesity can lead to severe forms of COVID-19 and mortality among COVID - 19 patients. The results findings show a link between obesity and impaired immune system, according to the Centre for Disease Control and Prevention (2022). NHS (2019) and Mayo Clinic (2021) shared multiple risk factors causing obesity, such as unhealthy diet, inactivity, medicine, etc. Finally, the conclusion and recommendation chapter will summarise the main findings; recommendations will be provided on how obesity can be prevented and cured. Such as healthy diet and increased activity can help lose weight, prevent numerous health problems, and reduce the risk of severe forms of COVID-19 and mortality.

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INTRODUCTION

According to World Health Organisation (2020), COVID-19 and obesity is a "bad combination", leading to severe outcomes and death. COVID -19 it's a very contagious disease discovered in December 2019 in China, Wuhan. Centres for Disease Control and Prevention (2021) suggested that Covid - 19 symptoms can "feel like flu or pneumonia, as it attacks the lungs and respiratory system". But it can also affect other parts of the body; some people may have mild symptoms while others can form a severe illness or die in the worst cases.

The people at risk are the ones with underlying health conditions, elderly and obese or overweight. According to National Health Services (2019), obesity can be defined as a body mass index of 30 or higher; currently, one in every four adults are obese or overweight in the UK. NHS (2019) also suggested that obesity can lead to numerous health conditions, such as type 2 diabetes, cardiovascular system disease, breast and bowel cancer and stroke. The following literature review research is designed to outline the link between obesity and COVID-19, potential risks, and recommendations will be provided on how obesity can be prevented and cured.

Muscogiuri et al. (2020) sustain that people with underlying medical conditions, the elderly and obesity are the most risk factors of developing severe forms of Covid - 19 if infected. Statistics collected from the Intensive Care National Audit and Research Centre Show that on 27 March 2020 in the United Kingdom, 72.1% of 775 patients infected with COVID-19 were obese or overweight, and 60.9% of them died.

World Health Organisation (2020) agrees with the findings. Scientific evidence suggests that obese people infected with Covid 19 end up hospitalised, "requiring intensive care treatment, medical ventilation," and in worst cases dying. The link between COVID-19 and obesity is an important aspect to consider as it increases the mortality rate among all ages. NHS (2021) statistics showed an increase in hospital admissions of 17% of people whit obesity, affecting all ages, such as one in every four adults and one in every five children are obese or overweight.

AIMS & OBJECTIVES

Why is obesity causing severe forms of COVID – 19?

The aim of the research is to identify the key factors causing severe forms of COVID 19 among obese people, and the objectives are to evaluate the risk factors causing obesity.

METHODOLOGY AND METHODS

Little (2014) defined methodology as "a set of ideas" on how to gather knowledge about a certain topic. Methodology refers to a theoretical, systematic
review of methods used in a given field. It is produced by applying a set of methods, or the application of a set of best practices, to a specific case to obtain a specific outcome. The methodology is used to guide operations, data collecting and hypothesis creation. For example, they systematically explore an issue or a topic area and find different solutions to that problem or the solution's effectiveness towards the topic area.

On the other hand, according to Cambridge Dictionary (2022), methods are the way of doing something in a structured and systematic way that is defined and clear. So ideally, different people using the same methods could work on getting similar results or using the same approach would help get consistency in the way they do things. Newington (2018) suggest that methodology answer the question "how the research is conducted?" and methods answer the question "what procedure will be used to collect data?". There are two major forms of research, qualitative and quantitative.

Using quantitative research methodology, the hypothesis can be tested through the analysis of graphs and numbers. It requires a large sample size, and the data collected will be analysed through mathematical and statistical techniques. Quantitative research answers the question "how much?" or "how often?", also called descriptive; there is comparative quantitative research as well, which answers the question "what is the difference between?". In qualitative research, the researcher formulates a hypothesis, summarizes, categorizes, and interprets the data after it is expressed in words and a smaller sample size is used. Qualitative research is naturalistic and emergent; naturalistic looks at real-world situations, while emergent means the researcher is open to emerging new lines of inquiry.

Malina et al. (2011) shared the advantages and disadvantages of qualitative and quantitative research. Advantages of qualitative data could include:

- Provides answers - finalizes scientific findings.
- Analyses data - eliminates external factors so the findings remain trustworthy.
- Perform extensive experiments - verify the result is reliable.
- Explain complex phenomena and provide valid feedback.

Qualitative data have the disadvantage that they are subjective, and therefore bias could be introduced in the results analysis and execution. They are also not conclusive, so the results cannot be generalized.

Advantages of quantitative data:

- Summarise large information- easily summarise huge information sources and facilitate good comparisons over time and across categories.
- Greater accuracy is intended to summarise data that supports generalisations about whatever topic is being investigated.
- Eliminate bias and finalises results.

The disadvantages of using quantitative data include the cost and time involved in removing bias from forms and questionnaires.

Efron and Ravid (2019) define literature review as a "complex and challenging project" consisting of numerous demanding tasks. A literature review is a critical recap of what has already been researched on a topic area, anything from the book, journal article or other sources. For example, the following literature review aim is to identify risk factors causing severe forms of COVID - 19 among people with obesity. The literature review is used to find out what is already known about the topic and how other researchers have approached it. Through this, unhealthy lifestyles, such as unhealthy diet and inactivity, increase the obesity number, according to NHS (2019). The literature review is also important to give the reader a critical overview of the main findings and the existing knowledge. Also, to find out what's missing from the occurred knowledge so that the writer can contribute with something original.

According to Myers (2019), equal considerations are vital, as there are general rules to follow in any kind of research, such as the golden rule, honesty, plagiarism, informed consent and permission to publish. The golden rule stands for treating others with respect and providing benefits to the organisation and individuals involved in the work. All investigation requires honesty; without it, all knowledge will crumble. Plagiarism is the purposeful copying of another person's work and presenting it as one's own; if items were copied or referenced from another source, these sources must be appropriately acknowledged. Potential informers should be "allowed freely to offer their informed consent to participate and advised that they can discontinue their involvement for any reason at any moment," according to informed consent. Permission to publish is often, most of the data collected will be owned by people or organisations, it is essential to us permission from the appropriate person to use the materials

LITERATURE REVIEW AND FINDINGS

Theme 1: Unhealthy lifestyle

According to Yates et al. (2021), obesity and ethnicity are directly linked to critical care and mortality among COVID patients. The article shared by Yates et al. (2021) included women participants who experimented with high infection rates, critical care, and mortality. Data was collected from UK hospital admissions and "in-hospital mortality". Furthermore, the study is based on direct experience and data collected from UK hospitals, resulting in the present qualitative in quantitative methodology. Such as participants included from different backgrounds, where 54,254 were white, 3728 South Asian, 2523 black in 5427 other ethnicities. Black ethnicities women with obesity were the most reported cases that needed critical care and reported dead compared to white people with no obesity.

On the other hand, Peters, MacMahon and Woodward (2021) suggest that obesity is a risk factor among both sexes' men and women, infected with Covid – 19. However, Peters (2021) agreed with Yates (2021) that women are more likely to die if infected with COVID. Peters 2021 conducted an analysis with data collected from National Dead Register, June 2020, including males and females aged 40 to 69. Analysis results suggest that COVID-19 mortality varies by ethnicity, sex, and obesity, such as from 502.493 individuals included in the analysis, 36% of women died from COVID-19 and obesity.

Mayo Clinic (2021) share the main causes of obesity and its risks, such as obesity can lead to numerous health issues, including diabetes, heart disease, high blood pressure, cancer and severe forms of COVID-19. The main causes for obesity are lifestyle choices, medication, inactivity, family influences, age, stress, pregnancy, quitting smoking, lack of sleep, social and economic issues. However, obesity, according to Mayo Clinic (2021), can be cured or prevented with a healthy diet, increased physical activity or medication and weight loss procedures in serious cases. Unhealthy diet and inactivity are the main cause for overweight or obesity, such as not being active enough, high calories diet, fast food, lack of fruits and vegetables contribute to weight gain.

Summary and conclusion

The first two articles were found in the university library and used qualitative and quantitative data based on experience, document analysis and data collected from hospitals and Dead Register. The articles described the analysis conducted including people with different backgrounds, ages, BMI and sex, resulting in that black woman with obesity are more likely to die if infected with COVID-19. The third article shared by Mayo Clinic (2021) suggests that obesity can lead to multiple health problems and severe forms of Covid – 19 if infected.

However, Mayo Clinic does not agree that obesity is more likely to happen among black ethnicities or women; instead, it suggests that obesity results from an unhealthy lifestyle.

Theme 2: Inactivity

Cancer Research UK (2019) suggests that 63% of adults in the UK are overweight or obese, with an estimate of 35 million people with a BMI of 30 or higher. As already stated previously, the obesity rate is higher in the Black and white British population than Asian, other white or mixed ethnicities. It is important to understand the risk of obesity and take action in order to live a healthy lifestyle and reduce the risk of illness and mortality. According to Cancer Research UK (2019), "overweight and obesity are major risk factors" leading to cancer and death, such as 6% of cancer cases are linked to obesity in the UK and 14% in Europe. Data in this article is quantitative, as it was collected from health surveys across England, Scotland and North Ireland.

According to Balentine (2022), a normal BMI should be between 18, and 24 and adults over 35 with a BMI of 30 or higher are obese. Obesity is a risk factor for numerous health problems. It is very hard to treat; as there are many options on how to lose weight, it has to be a long-term commitment to a healthy diet, increased activity, and regular exercise. For people who are sedentary but have fewer calories than active people, taking regular walks, running, and exercising at least three to four times a week can help them lose weight and become healthier. Losing weight can lower blood pressure, reduce the risk of diabetes and heart disease, as well mortality rates among Covid - 19 patients.

According to Rourke and Lumeng (2020), obesity, age and diabetes type two are considered risk factors among patients with respiratory disease, such as COVID -19. On the other hand, obesity can "be a protective factor for non-Covid - 19 associated Acute Lung Injury (ALI), and acute respiratory distress syndrome (ARDS)". Obese people have several pulmonary physiological changes that may lead to higher COVID-19 severity. As a result of the reduced sensation of respiratory trouble, obese patients may postpone seeking medical help, critical care or dying. Diabetes type two occurs among obese people who have a poor diet and lack of activity.

Summary and conclusion

The article shared by Cancer Research UK (2019) sustained that black ethnicity obesity statistics are higher compared to other ethnicities. Also, black adults with obesity are more likely to suffer severe forms of COVID -19 if infected and dying. Cancer Research UK (2019) suggest that 6% of cancer cases from the UK are linked to obesity and 14% in Europe. According to Balentine (2022), obesity can be treated with a long-term commitment,

including healthy diet, increased activity, and regular exercise. On the other hand, the article shared by Rourke and Lumeng (2019) agreed with the other two articles that obesity risk factors among COVID-19 patients sustain that diabetes occurs among obese people with poor diet and lack of activity. But it suggests that obesity can be a protective factor for non-COVID-19 associated acute long injury (ALI) and acute respiratory distress syndrome (ARDS).

Theme 3: Medicines

NHS (2019) suggests that obesity happens when people are moving too little and eating too much, but many other causes can lead to obesity. Such as high calories intake, processed food, fast food, alcohol, sugary drinks, inactivity, genetics, medicine, medical condition, stopping smoking and many more. NHS (2019) sustained that adult should do at least 30 minutes a day activity for five days a week, including walking, cycling, aerobic activities, swimming. Medicines also contribute to weight gain, antidepressants, corticosteroids or any other medicine to treat certain illnesses, such as epilepsy and Diabetes. Medicine lowers the body's immunity system; if the immunity system is low, the body cannot fight disease, leading to hospitalisation, critical care and mortality among COVID -19 patients.

According to Petrakis et al. (2020), COVID – 19 is the worst pandemic in the past century which infected more than 3 million people and killed 200.000 within a year. Obesity is the most important condition that increases the mortality risk of COVID - 19 patients. Clinical studies have shown that the body immune response is ineffective and poor recovery was shown among COVID -19 patients with obesity or any other illness linked to obesity, such as diabetes, hypertension, heart disease, asthma and many more.

Centres for Disease Control and Prevention (2022) sustained that the obesity rate is above 35% worldwide and worsens the symptoms and outcomes from COVID-19. There is a link between obesity and impaired immune system; it also decreases lung capacity, which leads to hospitalisation, medical ventilation, intensive care unit admissions and death among obese people. In the United Kingdom, 271.800 hospitalisations of COVID-19 were related to obesity in November 2020, affecting all ages, adults and children. Black ethnicities adults with the highest reported obesity cases with an estimate of 40.7% compared to white adults with 35%; black people are more likely to suffer severe forms of COVID -19 and die.

Summary and conclusion

Petrakis et al. (2020) agreed with NHS (2019) that obesity could lead to other health problems and increase the mortality rate among COVID-19 patients. The Centre for Disease

Control and Prevention (2022) suggests that there is a link between obesity and impaired immune system; medicine is taken regularly can lower the immune system and contribute to weight gain. A weak body immune system response and recovery are poor when infected with COVID – 19, leading to hospitalisation, critical care and mortality among obese patients.

FINDINGS AND DISCUSSION

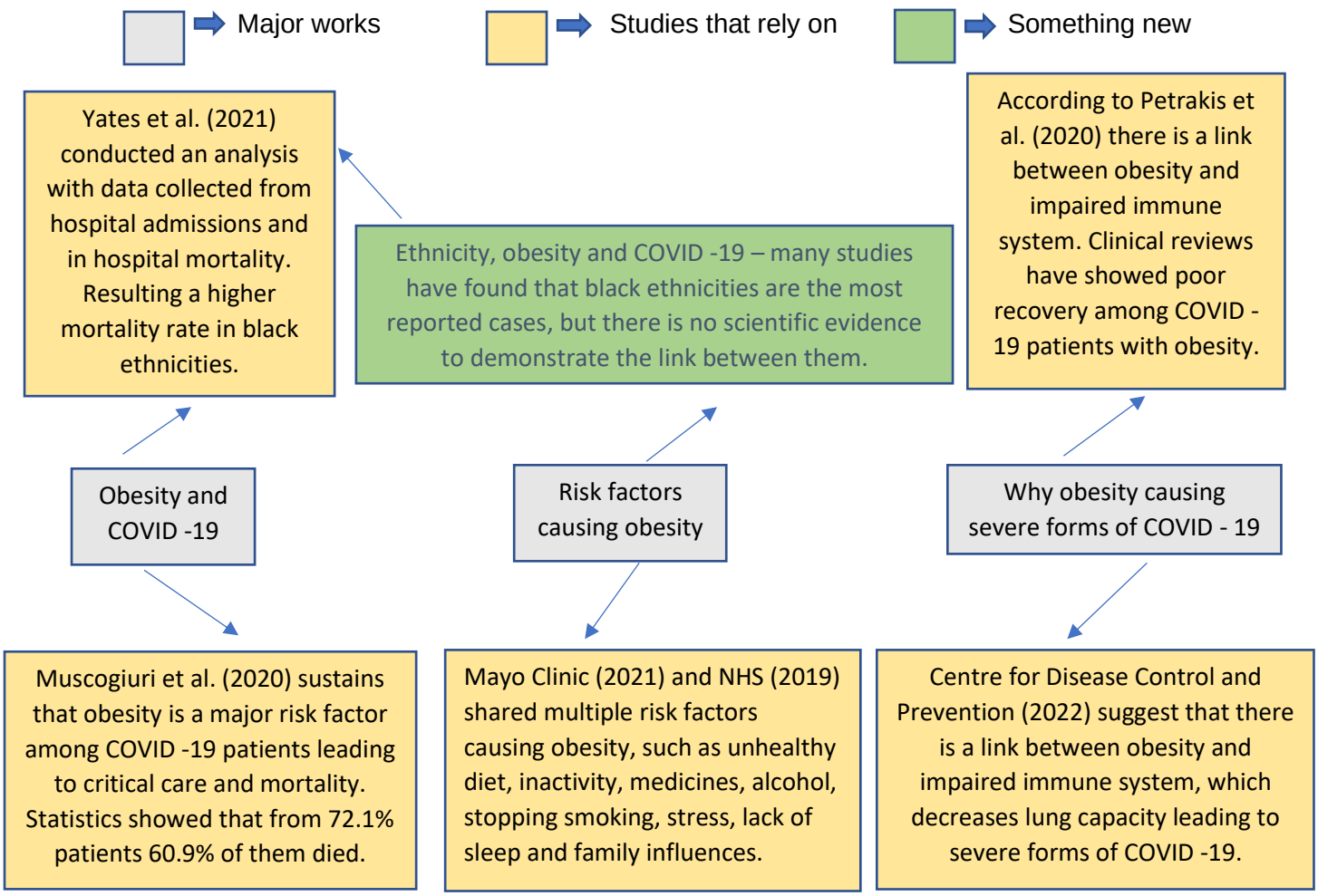
According to the Centre for Disease Control and Prevention (2022), obesity is linked to the impaired immune system and decreased lung capacity, leading to severe forms of COVID and a higher mortality rate among obese patients. An unhealthy diet, inactivity and medicines contribute to weight gain; maintaining a healthy diet, exercising regularly, hydrating and getting enough sleep can boost the immune system and help to lose weight. According to Shoemaker (2020), boosting your immunity system can only help to fight the disease, not as a protection against the virus. As stated previously, black ethnicities are the most reported cases of obesity compared to other ethnicities and are more likely to suffer severe forms of COVID -19 and dye. However, the link between ethnicity, obesity and COVID – 19 hasn't been scientifically proved.

Risk factors causing obesity shared by Mayo Clinic (2021) include lifestyle choices, such as an unhealthy diet high in calories in fast food, lack of fruits and vegetables, as well as inactivity and medical conditions. Also, obesity can lead to multiple health problems, such as diabetes, heart disease, high blood pressure, cancer and severe COVID-19 symptoms. NHS (2019) agreed with Mayo Clinic (2021) that obesity is a result of unhealthy lifestyles and can lead to numerous health problems. NHS (2019) also suggest that regular exercise at least 30 minutes a day for five days a week could help prevent and cure obesity. Taking regular medicines to treat certain illnesses contribute to weight gain and low immune system, making the body vulnerable and not responding to recovery if infected with COVID-19.

Petrakis et al. (2020) agreed with NHS (2019) just taking regular medicines to treat certain illnesses lower the immune system and contribute to weight gain. Balentine (2022) also agreed with Petrakis et al. (2020) and NHS (2019) by suggesting that people who are sedentary burn fewer calories than active people, and increased activities will help lose weight and reduce health problems.

Yates et al. (2021) suggest that obesity and ethnicity are directly linked to critical care and mortality among COVID-19 patients. Also, women are the most reported cases compared to males, data been collected from UK hospitals. Peters, MacMahon and Woodward (2021)

agreed that women are more likely to die if obese and infected with COVID – 19, data collected from National Dead Register. Cancer Research UK (2019) agreed with Yates et al. (2021) that the obesity rate is higher in black ethnicities compared to Asian or other white and mixed ethnicities. Data in this article is quantitative, as it was collected from health surveys across England, North Irland and Scotland. However, as per the literature review findings, black ethnicities are the most reported cases with obesity and worst outcomes of COVID-19. There are gaps in the literature to explain the link between obesity, ethnicity and COVID-19.



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CONCLUSION AND RECOMMENDATIONS

Summarising the main concepts, obesity is a major risk factor among COVID-19 patients, leading to hospitalisation, critical care and mortality. COVID - 19 it's a very contagious disease that attacks the lungs and respiratory system, according to Centres for Disease Control and Prevention (2021). Obesity is a body mass index of 30 and higher, meaning that there is excess fat in the body, currently affecting one in four adults in the UK, and one in five children, sustaining NHS (2019). Obesity can lead to numerous health conditions, such as diabetes, cardiovascular system disease, cancer, stroke, asthma, etc. According to Muscogiuri et al. (2020), in March 2020 in the United Kingdom, 72.1% of COVID-19 patients were obese, and 60.9% died.

Little (2014) defines methodology as a set of ideas on gathering knowledge about a certain topic or a systematic, theoretical analysis of the methods applied to a field of study. On the other hand, methods are the way of doing something; there are two major research methods, qualitative and quantitative. Qualitative research is based on experience, including document analysis, and quantitative is based on numbers, such as surveys. According to Efron and Ravid (2019), the literature review is a critical recap of what has already been researched on a topic area, allowing the researcher to critically analyse and find any gaps in the literature.

Mayo Clinic (2021) shared the main causes that lead to obesity, such as lifestyle choices, medication, inactivity, family influences, age, stress, pregnancy, quitting smoking, lack of sleep, social and economic issues. An unhealthy diet is the main cause of inactivity, eating too many calories and not being active enough to burn them. Cancer Research UK (2019) in Centre for Disease Control and Prevention (2022) suggests that black ethnicity obesity statistics are higher than white or any other ethnicities. Black people are more likely to suffer severe forms of COVID - 19 if infected and dying. Petrakis et al. (2020) and NHS (2019) sustained that obesity happens when a person is sedentary and eat too much. Also, medicines taken to treat certain illnesses, such as diabetes, can contribute to weight gain and lower the immune system. A low immune system makes the body weak, and it cannot fight disease because obesity is a major risk of mortality among COVID-19 patients.

NHS (2019) recommends a healthy, low-calorie diet and eating more fruit and vegetables to lose weight and, treat obesity and become more active such as walking, jogging, swimming, aerobic activities, cycling around 2.5 to five hours a week. Avoid fatty food, processed or fast food, sugary drinks or sweets and alcohol. Losing weight and living a healthy lifestyle lowers the risk of mortality among COVID-19 patients; it also reduces the risk for many other health

problems, such as diabetes, cardiovascular system disease and cancer. Fig. 1, shared by Chatterjee (2020), is a recommended plan for overweight and obesity regarding nutrition and physical activity. Such as improving the diet by eating more fruit and vegetables, planning the exercise in advance and setting goals, setting time for activity every day, motivation is everything regarding the unhealthy habits and social well-being. Monitoring BMI, blood pressure, and cholesterol is also highly recommended, by following the recommendation plan can prevent health problems, reduce severe forms of Covid -19 and mortality.

Fig. 1. Chatterjee (2020) recommendation plan for obesity and overweight.

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