The Collision of Two Pandemics: COVID-19 and Obesity

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• You can use chat to post comments and questions if preferred
• There will be a chance to ask questions after the speakers
• The recording will be circulated post-webinar
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00 – 13:10</td>
<td>Setting the stage</td>
<td>Donna Ryan &amp; Johanna Ralston</td>
</tr>
<tr>
<td>13:10 – 13:20</td>
<td>The science and evidence behind the association between COVID-19 and obesity</td>
<td>Steven Heymsfield</td>
</tr>
<tr>
<td>13:20 – 13:30</td>
<td>Issues affecting patients with obesity and COVID-19</td>
<td>Karine Clément</td>
</tr>
<tr>
<td>13:30 – 13:40</td>
<td>Lessons from early respondents to the coronavirus pandemic</td>
<td>Soo Lim</td>
</tr>
<tr>
<td>13:40 – 13:50</td>
<td>The collision of the two pandemics in South America</td>
<td>Ada Cuevas</td>
</tr>
<tr>
<td>13:50 – 14:00</td>
<td>Summary and takeaways</td>
<td>Donna Ryan &amp; Johanna Ralston</td>
</tr>
</tbody>
</table>
Setting the stage

Donna Ryan, MD
Professor Emerita, Pennington Biomedical Research Center.
President, World Obesity Federation.

Johanna Ralston
CEO, World Obesity Federation
An insight into COVID-19 cases globally
John Hopkins University & Medicine: Coronavirus Resource Center
Background on COVID-19 and WHO

On December 31, 2019, the World Health Organization (WHO) was informed of an outbreak of “pneumonia of unknown cause” detected in Wuhan City, Hubei Province, China. As of April 2, the number of cases has surpassed 1 million.

**WHO statement on NCDs and COVID-19: For people living with or affected by non-communicable diseases:**

- **People of all ages can be infected by the new coronavirus (COVID-19).**
- **The risk of becoming severely ill with the virus appears to increase if you are 60+.**
- **People with pre-existing non-communicable diseases (NCDs) also appear to be more vulnerable to becoming severely ill with the virus. These NCDs include:** Cardiovascular disease (e.g. hypertension, persons who have had, or are at risk for, a heart attack or stroke), Chronic respiratory disease (e.g. COPD), Diabetes and Cancer.

Obesity is not a separate independent risk factor for COVID-19 nor is data about BMI collected in a standardised manner. The World Obesity Federation, which is in official relations with WHO, considers that this is in part because obesity, which is a risk factor for the major NCDs and a disease in its own right, is not classified across the WHO “five by five” main diseases and risk factors within the noncommunicable disease framework.
The science and evidence behind the association between COVID-19 and obesity

Steven Heymsfield, MD
Pennington Biomedical Research Center,
Louisiana State University System
Baton Rouge, Louisiana, USA.
Increased risk of COVID-19 complications in patients with obesity: what is the evidence?

- **Background**: Comorbidity risks are increased [e.g., T2DM OR 7.37 in people with severe obesity]; multiple comorbidities common [dyslipidemia, T2DM, asthma, obstr. sleep apnea].
- **Susceptibility may be increased** [e.g., chronic meta-inflammation state/systemic implications for immunity; delayed and blunted antiviral responses to influenza virus infection.
- **Epidemiology** (CDC): one health condition_27% not hospitalized; 71% in hospital, not in ICU; 78% in ICU. T2DM, chronic lung disease, CVD most common. 94% of deaths/1 health condition. Other risk factors, older age & male sex.
Early Clinical Observations

- **Seattle, USA**: (NEJM) N=24, ICU->BMI (X/SD), 33.2±7.2 kg/m²; 51% T2DM, 21% Obstr. Sleep Apnea; 12 died over short term.
- **Seattle, USA**: long-term care facility; (NEJM) N=167, 22.2% obese, 22.8% T2DM.
- **ICNARC (UK)**: 795 ICU admissions. Critically ill patients BMIs mirrored the general population and earlier viral pneumonias.
- **Italy (National Italian Institute of Health)**: 3200 deaths. 33.9% T2DM; 30.1% CVD; 48.6% in those with 3 comorbidities; obesity reported in young-age deaths.
- Need for additional susceptibility and outcome data.
Special Considerations for Patients with Obesity

- Severe obesity is present in almost 10% of Americans.
- Underlying chronic comorbidities (e.g., CHF, HBP, NASH, obesity hypoventilation syndrome, etc.). Increased risk of ARDS.
- Difficult intubation, extubation, central iv-line insertion.
- Risk of thromboembolic events, pressure ulcers.
- Size limitations of diagnostic capabilities (e.g., MRI).
- Medical units/ICUs not designed to accommodate patients with severe obesity (beds, etc.).
- But is ICU morality increased?
References


- https://www.cdc.gov/mmwr/volumes/69/wr/mm6913e2.htm
Issues affecting patients with obesity and COVID-19

Karine Clément, MD, PhD
Professor of Nutrition
Pitié Salpêtrière Hospital, Sorbonne Université, INSERM, Paris, France.

French Association for the Study of Obesity (AFERO)
Other medical issues affecting patients with obesity and COVID-19: viral shedding and vaccination efficacy

• Infection risk: Not yet known for COVID-19 (Watch/Study in progress)

BUT based on records on other viral infections (H1N1, influenza, other coronavirus): greater severity risk

• Increased hospitalization rate Risk ≥ 8 (BMI > 30) and ≥ 35 (BMI > 40) (H1N1), Risk 2.8 (BMI > 40, coronavirus, parainfluenza.)¹

• More hospitalisation in intensive care and death in hospitalised patients²
  o Meta-analysis 3059 patients (H1N1 infection).
  o Risk of hospitalisation in ICU: BMI >40 : 2.01 (1.3-3.1)
  o Risk of death in patients with BMI > 40 : (comparison to patients with obesity), Risk: 1.78
  o Some studies report lower mortality in (mild) obesity (H1N1)

• Response to antivirals and antimicrobials: poorer in obesity and morbid obesity³

• Increased time in viral portage (for Influenza A)⁴

• Response to vaccine: reduced in obesity³

⇒ Awareness for COVID-19 in subjects with obesity (virus shedding, future vaccine..)

³Review In Dhurandhar, Obes Rev 2015
⁴Maier Obesity Increases the Duration of Influenza A Virus Shedding in Adults, The Journal of Infectious Diseases 2018
Other medical issues affecting patients with obesity and COVID-19: ICU Challenge

- **COVID-19 risk**: Major risk of acute respiratory distress syndrome (ARDS)
- **Severity risk factors of COVID**: Hypertension, Type 2 Diabetes, COPD, Impaired kidney and liver function, Low grade inflammation (IL6), Elevated D-dimers
- **In obesity and severe obesity**
  - Restrictive respiratory failure/Alveolar hypoventilation
  - Thromboembolic risk +++-COVID-19 favours pulmonary embolism
  - Reed adapted pharmacotherapy (pharmacokinetic)
  - Immune frailty (lymphopenia, T lymphocyte functional perturbation)
  - Investigation difficulties (blood samples, examinations, patient transport, intubation)
  - Non adapted equipment in some units (MRI, scanners)
- **More severe resuscitation complications**
- **Malnutrition diagnosis often delayed** (search albuminemia)
- **Controversial results for ARDS-induced mortality in obesity**

Lessons from early respondents to the coronavirus pandemic

Soo Lim, MD, PhD
Professor
Department of Internal Medicine, Seoul National University College of Medicine, Seoul National University Bundang Hospital.
COVID-19 Real-time Dashboard

Cases in Korea (as of 12am on March 31, 2020, data aggregated from January 3)

- Confirmed Cases (accumulation): 9,786
- Released from Isolation: 5,408
- Isolated: 4,216
- Deceased: 162

Testing in Korea (as of 12am on March 31, 2020, data aggregated from January 3)

- Tests Performed: 410,564
- Tests Concluded: 393,672
- Positive Tests/Total number of tests: 2.5%

Weekly Updates for Countries with Major Outbreaks

USA
Italy
Spain
Korea
China
UK
Germany
France

## Mortality data from COVID-19 in Korea (16-Mar-2020): Comorbidity

<table>
<thead>
<tr>
<th>Underlying Disease (overlap)</th>
<th># of subjects</th>
<th>rate (%)</th>
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<tbody>
<tr>
<td>Cardiovascular diseases (ex. MI, Heart failure, A. fib, Hypertension)</td>
<td>47</td>
<td>62.7</td>
</tr>
<tr>
<td>Metabolic diseases (ex. Diabetes mellitus, hypothyroidism)</td>
<td>35</td>
<td>46.7</td>
</tr>
<tr>
<td>Mental (ex, Dementia, schizophrenia)</td>
<td>19</td>
<td>25.3</td>
</tr>
<tr>
<td><strong>Respiratory (ex. Asthma, COPD, pneumonia)</strong></td>
<td>18</td>
<td>24.0</td>
</tr>
<tr>
<td>Genitourinary</td>
<td>11</td>
<td>14.7</td>
</tr>
<tr>
<td>Malignant neoplasm (cancer)</td>
<td>10</td>
<td>13.3</td>
</tr>
<tr>
<td>Nervous system</td>
<td>3</td>
<td>4.0</td>
</tr>
<tr>
<td>Digestive system</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Hematopoietic</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>High risk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 65</td>
<td>61</td>
<td>81.3</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>16</td>
<td>98.7</td>
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# Comparison of Mortality rates from COVID-19

<table>
<thead>
<tr>
<th>Countries</th>
<th>Infected</th>
<th>Death</th>
<th>Mortality rate</th>
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<tbody>
<tr>
<td>USA</td>
<td>161,807</td>
<td>2,978</td>
<td>1.8%</td>
</tr>
<tr>
<td>Italy</td>
<td>101,739</td>
<td>11,591</td>
<td>11.4%</td>
</tr>
<tr>
<td>China</td>
<td>81,518</td>
<td>3,305</td>
<td>4.1%</td>
</tr>
<tr>
<td>Iran</td>
<td>41,495</td>
<td>2,757</td>
<td>6.6%</td>
</tr>
<tr>
<td>Korea</td>
<td>9,786</td>
<td>162</td>
<td>1.7%</td>
</tr>
<tr>
<td>Japan</td>
<td>1,953</td>
<td>56</td>
<td>2.9%</td>
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**Why are COVID-19 infections under control in Korea?**

1. Early detection
2. Aggressive & Widespread testing
3. Previous lesson from SARS and MERS outbreak
4. Rapid measures

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COVID-19 is a global pandemic and may pose considerable health hazard especially for people with chronic diseases.

Virus infection could be risky for people with obesity because their immune system is commonly compromised.

Close monitoring of people with obesity is required because of less physical activities and unhealthy food consumption under the pressure of social distancing.
The collision of the two pandemics in South America (SA)

Ada Cuevas, MD, MSc
Medical Director, Center for Advanced Metabolic Medicine and Nutrition (CAMMYN) Santiago, Chile.
WOF Clinical Care Committee (CCC)
• Worldwide obesity has nearly tripled since 1975, SA is not an exception.
• Increasing obesity in SA, has been associated with higher prevalence of obesity related co-morbidities and complications.
• Nevertheless, the epidemic of obesity in SA is co-existing with undernutrition and poverty (people living in crowded areas, lack of sanitization, lack of health insurance and social security).
• In this mixed and complex scenery, an unexpected and severe enemy and a new pandemic disease has emerged all over the world, including SA, Coronavirus (COVID-19).
• COVID-19 pandemic has required a number of measures taken by most of SA countries including quarantine, social distancing, strained food systems, in-door activities and school/universities closure among others.
Consequences of COVID-19 in SA

• **Dietary changes** - increased intake of more processed and long-life foods, reduction in healthier fresh options (fruits, vegetables, and others), food delivery of fast foods.

• **Social distancing** - school closures, home-office and other activities at home using web-system contributing to a sedentary lifestyle.

• **Mental health** - stress, anxiety, mood disturbances. Higher consumption of caloric foods + alcoholic beverages, and sleep deprivation.

• **Changes in our times-activities** - disturbances in circadian rhythms.

• **Alterations in microbiome?**

All risk factors for obesity and its related-comorbidities, with the consequent increased health´s cost.

Co-existing with the deleterious impact of COVID-19, worst in low income regions.
CHALLENGES FOR THE COLLISION OF THE TWO PANDEMICS IN SA

DURING THE COVID-19 PANDEMIC: Nutritional food must be available, facilities for physical activities and psychological support. Facilities for telemedicine. Insurance coverage.

AFTER THE COVID-19 PANDEMIC:

For Governments, Health & Education´s authorities
Sanitization, immunization, food healthy supplies.
Healthcare systems and practices for obesity care, prevention and treatment policies.
Increase and improve educational training in obesity.

For Health Care Providers (HCPs)
Recognize obesity as a chronic disease that deserves diagnosis, adequate treatment and follow-up.

For the Food Industry
Investment in development of healthy-non expensive foods.

For workplaces
Promote and provide facilities for healthy work´s environment.

For the general population
Adopt permanent healthy lifestyles, promote breastfeeding, protect your environment, ask for help to your community and HCP.

THE SUN ALWAYS SHINES AFTER THE STORM, BUT WE MUST WORK TOGETHER!
References

1. UN Food and Agricultural Organization/WHO
2. WHO. Global Health Observatory
Summary & takeaways:

• Patients with obesity likely have increased risk for COVID-19 complications.
• Patients with obesity likely have increased viral shedding and are less likely to respond well to immunization.
• Lessons from around the world point to no quick fixes, continued community spread is evident due to asymptomatic viral shedding.
• Low- and middle-income countries (LMICs) are challenged by COVID-19 disruption to providing basic human needs.

What are we to do?
Final remarks
Final remarks:

- Steven Heymsfield - Everybody should practice social distancing, hand-washing, good nutrition, physical activity, sleep hygiene and social support.
- Karine Clement - We must fight misinformation. Continue your current treatment if you have a chronic disease.
- Soo Lim - Research is important. There are international clinical trials of approved medications that might be useful. We need brave and altruistic patients to volunteer.
- Ada Cuevas - Remember the less fortunate. LMICs are struggling with undernutrition, obesity & now COVID-19. You can play a part and support our local communities.
- Johanna Ralston – Obesity is as an important chronic disease, contributing to the COVID-19 challenge – we are experiencing a collision of pandemics.
Learn More:

The World Obesity Federation (WOF) webinar series on COVID-19 & Obesity will resume next week...

- **Thursday 9th April**
  The patient with obesity in the time of COVID-19: hearing from the front lines

- **Friday 17th April**
  COVID-19 & Obesity: impact on children

*Further in-person updates to follow at ECO-ICO in Dublin, Ireland on 1st-4th September, 2020.*

Resources:

**WOF** - [https://www.worldobesity.org/resources/resource-library/covid-19-obesity-resources](https://www.worldobesity.org/resources/resource-library/covid-19-obesity-resources)
- SCOPE E Learning module on Obesity & COVID-19 coming soon


**TOS** - COVID-19 and the Patient with Obesity - the Editors Speak Out
Thank You!

Please contact Claudia Selin Batz at cbatz@worldobesity.org if you have any queries.