IHME GBD GLOBAL BURDEN OF DISEASE

Long COVID in children

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WHO seminar

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Definitions & methods

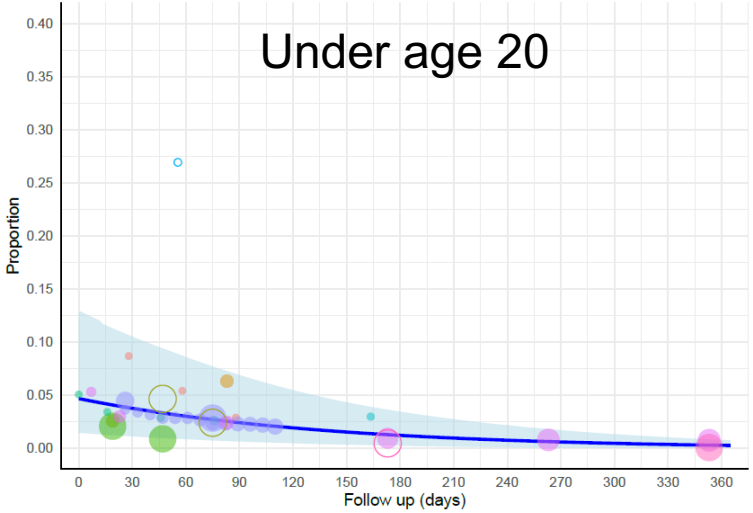
- A proportion of patients continue to experience a host of symptoms after clearing the virus
- Terms such as ‘long COVID’, ‘long haulers’, ‘brain fog’, post-acute symptoms of COVID-19 (PASC)
- >50 symptoms mentioned in published studies
- …but published studies report on individual symptoms or counts of symptoms only
- For GBD, greater detail required
- → contacted researchers of studies listed in trial register as ‘ongoing’ or ‘planned’
- Most reacted positively and 10 follow-up studies (IRN, RUS, CHE, ITA, NLD, SWE, DEU, AUT, USA…and Faroer Islands) included in our analyses supplemented by two large (VA and private) US medical record data collection systems and findings from 44 published studies we could incorporate
- We decided on three symptom clusters based on the frequency of reporting of these in published studies and the collaborating cohort studies …and availability of disability weights

Definitions & methods

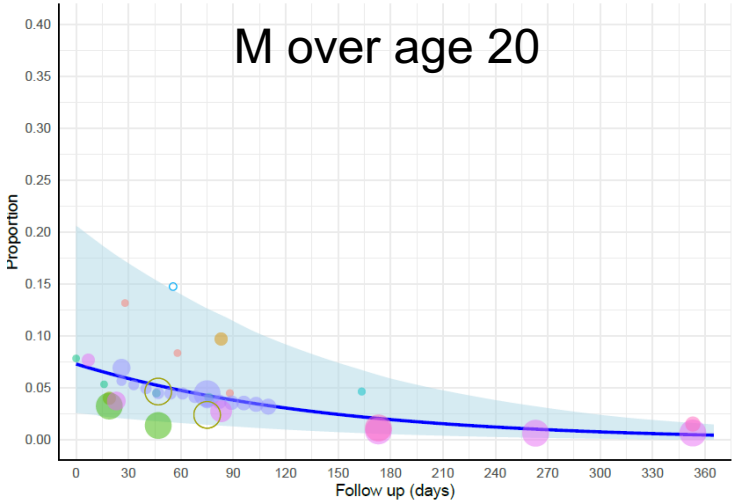
- Three clusters:
  - Fatigue, bodily pain and mood swings (1 level of severity); currently used in GBD for a post-infection syndrome following dengue, zika and ebola
  - Ongoing respiratory symptoms: shortness of breath and cough (3 levels of severity)
  - Cognitive problems: memory loss, lack of concentration (2 levels of severity)
- With study researchers we developed algorithms to best capture the constructs of these clusters by matching disparate questions and measures across surveys to the key words of the lay descriptions of the six health states for which we have GBD disability weights (DWs)
- Separate analyses for symptomatic community cases, those hospitalized and those who required ICU admission
- Enough data to make separate estimates for those <20 years of age among community cases:
  - 13,500 children followed up in UK (3 studies), DNK, AUS and ITA

GBD

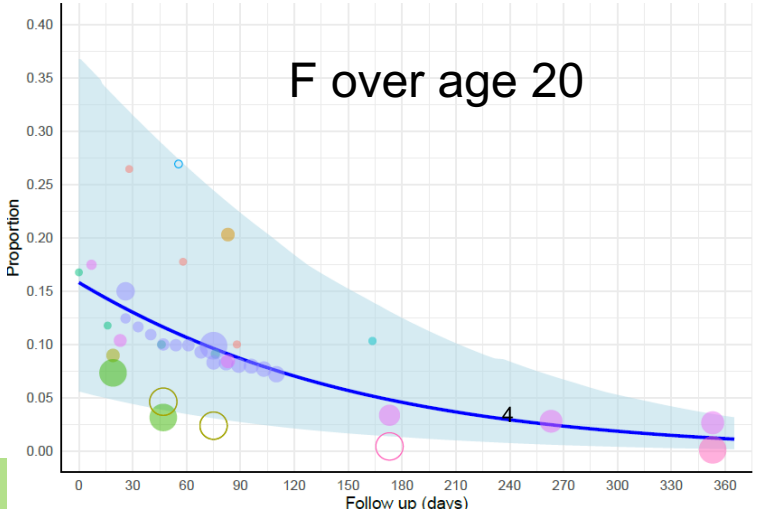
Under age 20

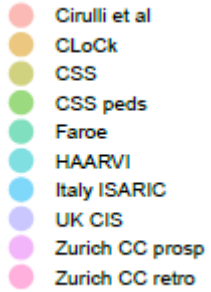


M over age 20



F over age 20





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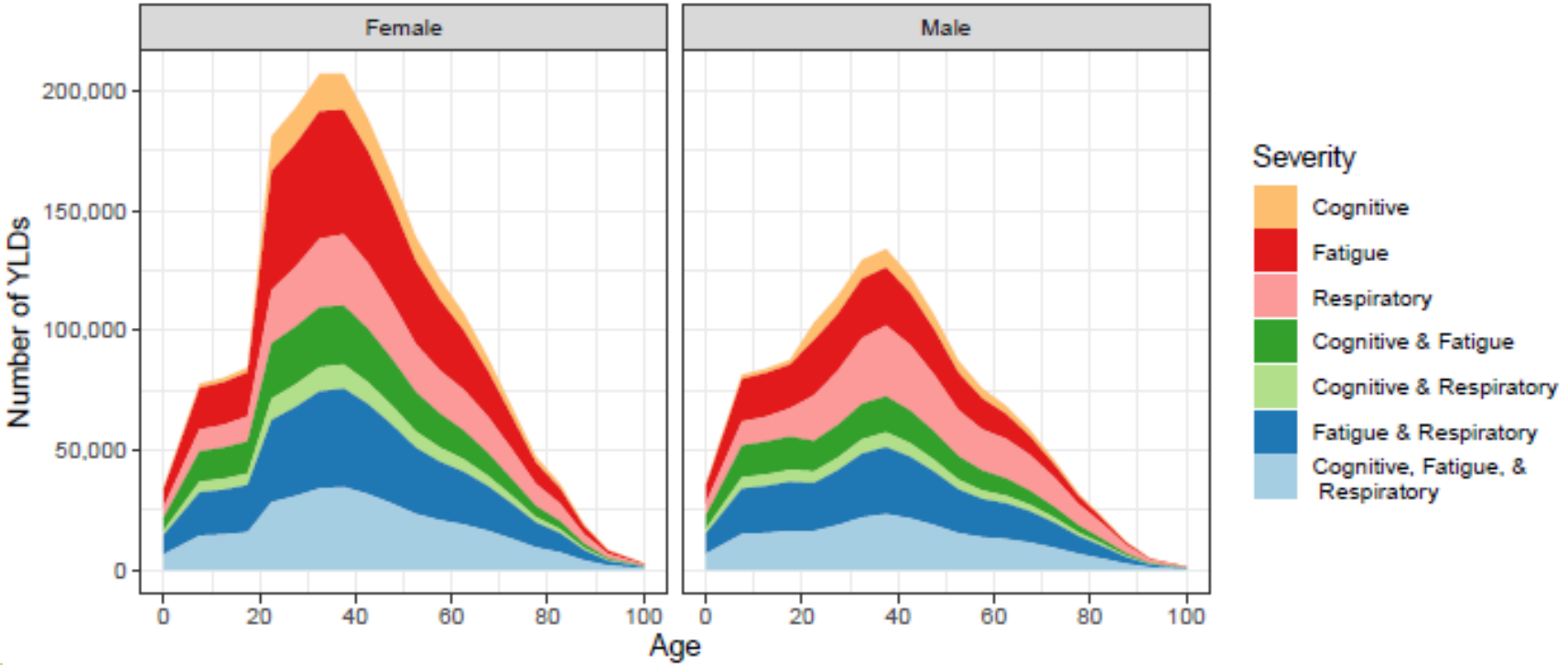
Results

- 2.8% (0.9-7.0) of those under age 20 have one or more of the three symptom clusters of long COVID at three months post acute infection
- M >20yrs: 5.4% (2.2-11.7) and F>20yrs: 10.6% (4.3-22.2)
- 24 million (8-58) cases with the long COVID symptom clusters at three months after the acute infection (estimates are available by age, country, sex)
- 96% (89-99) of cases were not hospitalized
- YLDs in 2021 under age 20: 1.9% of total YLDs; ranked 16 just after epilepsy and autism spectrum disorders
- Median duration:
  - symptomatic community infections: 4.0 months (IQR 3.8-4.2)
  - Hospitalised cases: 8.8 months (IQR 8.1 – 9.8)
- Average DW 0.21, equivalent to GBD DWs for severe traumatic brain injury and complete hearing loss

Long COVID YLDs by age, sex and cluster

Fatigue most common cluster followed by ongoing respiratory problems; cognitive symptoms much less common under age 20 compared to adults with long COVID



Limitations

1. Choice of clusters
   - Analysis of large Moscow cohort suggests that we capture 69% of those reporting ongoing problems and a worsening of general health status compared to before COVID
   - 24% reported symptoms from the three clusters we quantified but at a ‘sub-threshold’ level by reporting same or better on ‘problems with usual activities’ item of the 5-level EQ5D instrument. Lack of DWs for e.g. isolated fatigue makes quantifications more difficult in GBD
   - Remaining symptoms of vision loss, loss of smell, sleep problems and hair loss do not have a straightforward way of quantifying in GBD as no specific DW

Limitations

2. Assumption that long COVID only occurs in asymptomatic cases
   - In cohorts from ITA and USA there were no long COVID cases among 9 and 53 asymptomatic infections, respectively
   - In cohorts from CHE and Faroe Islands, among 22 and 182 asymptomatic infections there were 5 and 3 reporting long COVID symptoms at follow-up ….→ there may some, low, risk of long COVID in asymptomatics that we have excluded
3. Large uncertainty from infections, % asymptomatic, probability of long COVID, overlap of clusters, and DWs
4. Limited follow-up time and, hence, difficult to ascertain duration, particularly for those hospitalised for their initial infection

Conclusions

- Large number of cases of long COVID looking for recognition and rehabilitative/supportive care for disabling symptoms of considerable severity.
- What we know about duration is that it resolves in the majority of cases, sooner in community infections than those hospitalized
- COVID-19 is not only infectious disease with such extended symptoms:
  - Similar syndromes reported for SARS-Cov-1, dengue, Q fever and a host of other (mostly viral) infections
- Hope is that current focus on long COVID will trigger better understanding of the underlying mechanisms and potential treatments or methods of prevention ….. that eventually could benefit a larger patient population beyond that of COVID-19
- Risk estimated to be considerably lower with omicron infection at ¼ to 1/3 of risk of previous variants …but when multiplied with large number of infections it still would concern a lot of people