Health, Psychosocial and Economic Impacts of COVID-19 on people with chronic conditions

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Outline

• Impact of COVID-19 Pandemic on chronic conditions
• Changing environment for health care delivery – Digital health innovations to reduce inequality in chronic disease care
• Gaps in COVID-19 Research
• WHF COVID-19 and CVD study – Preliminary findings
• Conclusions
COVID-19 Impacts on chronic disease care

Since January 2020, COVID-19 has rapidly become a global concern and its cardiovascular manifestations have highlighted the need for fast, sensitive and specific tools for early identification and risk stratification.

A general practitioner from London was quoted in *The New York Times*: “We’re basically witnessing 10 years of change in one week”
COVID-19 Impacts on Chronic disease care

Several conditions raise concern for the welfare of patients with and at high risk for CVD during this pandemic.

Traditional ambulatory care is disrupted, and many patients are delaying care, including preventive care.

New impediments to medication access and adherence have arisen.

The changes to lifestyle habits with social distancing, high societal stress/anxiety from fear of COVID-19 may affect those with CVD.
## Quantitative Survey

<table>
<thead>
<tr>
<th>IMPORTANCE</th>
<th>OBJECTIVES</th>
<th>DESIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>- People with chronic conditions are prone to be affected by the COVID-19 Pandemic.</td>
<td>- To assess the impacts of COVID-19 and related mobility restrictions on access to health care, health status, and self-care behaviors.</td>
<td>- Cross-sectional, region stratified (4 states, urban vs. rural) sampling from the existing large cohorts (CARRS and UDAY).</td>
</tr>
<tr>
<td>- Limited data documenting the Pandemic impacts from low- and middle-income countries such as India.</td>
<td>- To assess the impacts of COVID-19 pandemic on employment and household income.</td>
<td>- Telephone survey conducted in adults with one or more chronic conditions (diabetes, hypertension, heart disease, stroke, CKD)</td>
</tr>
<tr>
<td>- On 24 March 2020, Indian government ordered a nationwide lockdown until June in four phases. - Further, extended only in containment zones.</td>
<td>- To compare the COVID-19 pandemic impacts in rural vs. urban communities in India.</td>
<td>- Data collected between 29 July 2020 to 12 September 2020 in four sites (Delhi, Chennai, Haryana, Vizag) in India.</td>
</tr>
</tbody>
</table>
COVID-19 Impacts in urban and rural people with chronic conditions

- 1734 out of 2335 contacted individuals completed the survey (response rate=74%)
- Mean age: 58 years (11.3), 50% men
Correlates of worsening diabetes or hypertension symptoms

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;=45 years</td>
<td>1.00</td>
<td>1.0</td>
</tr>
<tr>
<td>46-60 years</td>
<td>1.52 (0.87, 2.65)</td>
<td>0.143</td>
</tr>
<tr>
<td>&gt;=60 years</td>
<td>0.91 (0.50, 1.65)</td>
<td>0.760</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.24 (0.66, 1.70)</td>
<td>0.253</td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1.50 (0.95, 2.45)</td>
<td>0.081</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College degree and above</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>High school and secondary</td>
<td>0.77 (0.47, 1.26)</td>
<td>0.295</td>
</tr>
<tr>
<td>Uplo primary school</td>
<td>0.76 (0.41, 1.43)</td>
<td>0.395</td>
</tr>
<tr>
<td>Income (INR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;30,000</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>10,001-30,000</td>
<td>0.74 (0.47, 1.19)</td>
<td>0.214</td>
</tr>
<tr>
<td>&lt;=10,000</td>
<td>1.18 (0.69, 2.01)</td>
<td>0.555</td>
</tr>
<tr>
<td>Disease conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>2.48 (1.70, 3.62)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hypertension</td>
<td>2.50 (1.56, 3.41)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>General anxiety disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>0.90 (0.53, 1.52)</td>
<td>0.695</td>
</tr>
<tr>
<td>Moderate/Severe</td>
<td>1.36 (0.67, 2.76)</td>
<td>0.305</td>
</tr>
<tr>
<td>Physical activity in the last one week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 days</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>1-3 days</td>
<td>0.90 (0.53, 1.52)</td>
<td>0.711</td>
</tr>
<tr>
<td>4 days</td>
<td>1.36 (0.67, 2.76)</td>
<td>0.018</td>
</tr>
<tr>
<td>Fruits consumption during lockdown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No change in fruit intake</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Increased fruit intake</td>
<td>1.40 (0.78, 2.53)</td>
<td>0.222</td>
</tr>
<tr>
<td>Reduced fruit intake</td>
<td>0.59 (0.36, 0.98)</td>
<td>0.087</td>
</tr>
<tr>
<td>Difficulty accessing medications due to COVID-19 situation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.67 (2.32, 5.53)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Received financial support from government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.87 (1.25, 2.80)</td>
<td>0.002</td>
</tr>
<tr>
<td>Experienced loss of job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.90 (1.25, 2.89)</td>
<td>0.002</td>
</tr>
<tr>
<td>Experienced loss of income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.96 (0.55, 1.63)</td>
<td>0.526</td>
</tr>
</tbody>
</table>
Qualitative Study

OBJECTIVE
- To describe the challenges posed by the COVID-19 pandemic in people with chronic conditions and their mitigation.

METHODS
- In-depth interviews with 40 patients were audio-recorded, transcribed and coded using MAXQDA.
- Thematic analysis using interpretative approach and deductive logic.

Singh et al. BMJ Open 2021
The impact was that there were a lot of problems. We took the ration distributed by the government. We consumed that. There were a few things at home, we sold one or two things with the help of my daughter. My son drives a rickshaw, and my husband stays at home; we are old. It impacted him [spouse]. He [spouse] was out of work for three months.” [R-02-V]

“I was not keeping well and none of the hospitals were taking any admission . . . they said that due to COVID, beds are not available. And if you are ready to sleep on ground then we will take your admission” [U-08-V]

“We faced difficulties at home because I am into driving... actually, I am driver. Before lockdown, I went home for some work. Because of lockdown, I had to stay at home for 2 months, 15 days. I, my wife, and children are jobless since then. There was no possibility of doing any work or going anywhere. We had a lot of trouble at that time”. [U-10-D]

“I was scared that I may not have this [COVID] but because of someone else I may get affected. We have doubt to go to the hospital, to the doctor. I didn’t want to get infected by this (COVID-19).” [U-02-D]

Challenges

1. Financial difficulties
2. Experienced difficulties in continuing their business or lost jobs
3. Difficulties in getting back to work due to lack of transportation
4. Difficulties in accessing inpatient services and access to treatment
5. Delayed testing of blood sugars or clinic visits due to fear/anxiety.

Singh et al. BMJ Open 2021
Mitigators

• Participants with diabetes and hypertension were mostly aware of their elevated risk of poor outcomes if infected with SARS-CoV-2 and many feared to go out for a walk or other regular exercise.
• Participants were informed of wearing masks, social distancing, or washing hands.
• Few participants reported use of teleconsultations with doctors.

“We have to be careful from the corona and we have to be safe from this. That’s the only medicine now.” [U-01-D]
Key messages!

1. Pandemic had unforeseen adverse impacts on the health, access to treatment, care goals, employment

2. Rural participants disproportionately affected: poor treatment access and satisfaction, reduced fruits and vegetables consumption

3. Pandemic impact extends beyond health: household income, livelihood, coping skills, interpersonal relations

4. Pandemic exposed management difficulties in the health system but also provide opportunities to close gaps with innovations in the new post-COVID India
Changing environment for chronic disease care

The COVID-19 pandemic has led to digital revolution in health care, with faster adoption of telemedicine.

Remote consultation, m-health tools, wearables, became essential to support the traditional face-to-face interaction between patients and clinicians.

Reimbursement rapidly changed in many countries to support this digital transformation.
Digital health platforms to reduce inequalities in care

Digital Health Interventions (DHIs) Improve Cardiovascular (CV)-related Outcomes in Global Health Disparity Populations

Commonly Identified DHIs
- Telemedicine
- Mobile Health
- Decision Support

Disparity Populations Examined
- Race and Ethnicity
- Low Socioeconomic Status
- Geography

Improved CV-related Outcomes
- Health
  - Hypertension
  - Heart Failure
- Healthcare
  - Access
  - Utilization
  - Quality
Assisted Telemedicine Clinic – Digisahayam

- Two clinics in Chennai – Kodambakkam and Nanganallur | Upcoming clinic in Pasuvanthanai, Thoothukodi
- Clinic open 6 days a week - 9 AM to 5 PM
- In-person MBBS physician consultations
- Specialist Consultation through assisted telemedicine
- Free point-of-care rapid lab investigations and ECGs
- Over 800 consultations done so far

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WHF COVID-19 STUDY
BRIDGING THE RESEARCH GAP

<table>
<thead>
<tr>
<th>Regions</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Region</td>
<td>25,145</td>
<td>52.1</td>
</tr>
<tr>
<td>North America</td>
<td>19,271</td>
<td>39.9</td>
</tr>
<tr>
<td>Western Pacific Region</td>
<td>1,671</td>
<td>3.5</td>
</tr>
<tr>
<td>South-East Asia Region</td>
<td>882</td>
<td>1.8</td>
</tr>
<tr>
<td>South America</td>
<td>683</td>
<td>1.4</td>
</tr>
<tr>
<td>Eastern Mediterranean Region</td>
<td>432</td>
<td>0.9</td>
</tr>
<tr>
<td>African Region</td>
<td>187</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>48,271</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Sliwa et al. Global Heart 2021

➢ To describe cardiovascular outcomes among patients hospitalized with COVID-19.

➢ Observational cohort study including consecutive confirmed Adult COVID-19 patients.
WHF COVID-19 CVD STUDY RECRUITMENT (15.09.2021)

- 5313 patients recruited
- 40 sites
- 23 Countries

Data of first 2500 patients' baseline and outcomes presented at the European Society of Cardiology Late Breaking Science
WHF COVID-19 STUDY

Demographic Characteristics (N=2500)  

- Age, mean (SD): 56.6 (15.7)
- Male: 1559 (62.4%)
- Ethnic Origin:
  - Caucasian: 176 (7.0%)
  - Hispanic: 260 (10.4%)
  - Black: 589 (23.6%)
  - Middle Eastern: 102 (4.1%)
  - Asian: 1242 (49.7%)
  - Other: 131 (5.2%)

Co-morbidities (Cardiovascular)  

- Hypertension: 1152 (46.1%)
- Diabetes: 845 (33.8%)
- Coronary artery disease: 284 (11.4%)
- Heart Failure: 102 (4.1%)
- Stroke: 88 (3.5%)
- Atrial Fibrillation: 63 (2.5%)
- Peripheral vascular disease: 37 (1.4%)
- Cardiomyopathies: 33 (1.3%)

30 Day Outcomes  

- In-hospital death: 342 (13.9%)
- Death post discharge: 83 (3.3%)
- Total death: 425 (17.2%)
- Re-hospitalized: 21 (0.8%)
- Causes of death:
  - Respiratory failure: 166 (39.6%)
  - Sudden cardiac death: 123 (29.5%)
  - Presumed cardiovascular: 20 (4.6%)
  - Heart failure: 16 (3.8%)
  - Stroke: 8 (1.9%)
  - Myocardial infarction: 4 (1.0%)
  - Pulmonary embolus: 3 (0.7%)
  - Other: 79 (18.9%)
Implications of WHF COVID-19 and CVD study

- Interim analysis shows that COVID-19 patients recruited mostly from LMICs were younger compared to other cohorts from United States and Europe
- Higher rates of hypertension and diabetes, but lower in-hospital deaths (14%)
- But significant post-discharge mortality (i.e., 17% up to 30 days)
- The study findings will facilitate the understanding of the impact COVID-19 pandemic and guide the health care planning globally
- Long-term follow-up study is in planning
Conclusions

1. Unintended consequences on the healthcare access, psycho-social and economic status

2. Opens new opportunities to revolutionize patient's access to treatment

3. Conceptualize a "new normal of care delivery" for people with chronic conditions (telehealth, home monitoring devices, home delivery of medicines)
Thank you