The Differential Relationship Between Pre-Existing Health Conditions and Mental Health Outcomes During the COVID-19 Pandemic

Jacob Shaw, BS [1], Allie Gibbons, BS [1] and Joyce Y Chung, MD [1]

[1] National Institute of Mental Health, Office of the Clinical Director

Background

- The negative mental health impact of the COVID-19 pandemic on the general public has been well documented[1]
- Published reports find that individuals with pre-existing medical or mental illnesses have higher rates of COVID-19 morbidity and mortality[2-4]
- In addition, a history of chronic disease, medical, or mental illness are risk factors for anxiety and distress during the pandemic[5]
- Evaluating the differential relationship between pre-existing health conditions and mental health outcomes during the pandemic may identify those at most risk and inform interventions[6]

Aims

1. To evaluate the relationship between pre-existing health conditions (medical, mental health, or both) and mental health outcomes (clinical and COVID-specific) during the COVID-19 pandemic
2. To compare changes in disability and distress between groups at two timepoints separated by six months
3. To describe group differences in pandemic-related variables, such as social support, loneliness, and delayed health care

Methods

Data Collection

- This is a sub-analysis of an online, longitudinal study (NCT04339790) of the mental health impact of the COVID-19 pandemic started in April 2020
- A convenience sample of adults across 50 U.S. states was recruited via email, social media ads, list-serv postings, and clinicaltrials.gov
- Online consent was followed by self-report surveys (including clinical history) at enrollment, then every two weeks for six months
- Selected mental health outcome measures:
  - **Clinical outcomes: Disability (WHODAS 2.0) & Distress (Kessler-5)**
  - **COVID-19 Specific Outcomes (Psychosocial Impact of COVID-19 Survey)**
- Additional measures were collected at the end of study timepoint:
  - **Instrumental and Emotional Support (PROMIS)**
  - **Loneliness (3-Item Loneliness)**
  - **Healthcare Seeking Behaviors (Clinical History Form)**

Data Analysis

- A subsample of participants enrolled between 4/4- 5/16/20 (lockdown period) were included in this analysis (Figure 1)
- Self-report clinical history data was used to form study groups:
  - **Mental health condition:** History of mental health hospitalization, medication for a mental health condition, and/or treatment for alcohol/drug abuse
  - **Medical condition:** History of cancer, heart disease, immune disorder, lung disease, liver disease, kidney disease, high blood pressure, and/or diabetes
- Ordinal logistic regressions were performed to evaluate the association between pre-existing health conditions and mental health outcomes at the time of study enrollment
- Linear regressions were performed to compare changes in mental health outcomes between groups with or without mental and/or medical health conditions at two timepoints separated by six months
- Analyses controlled for age, sex, and income due to demographic differences between groups (Table 1)
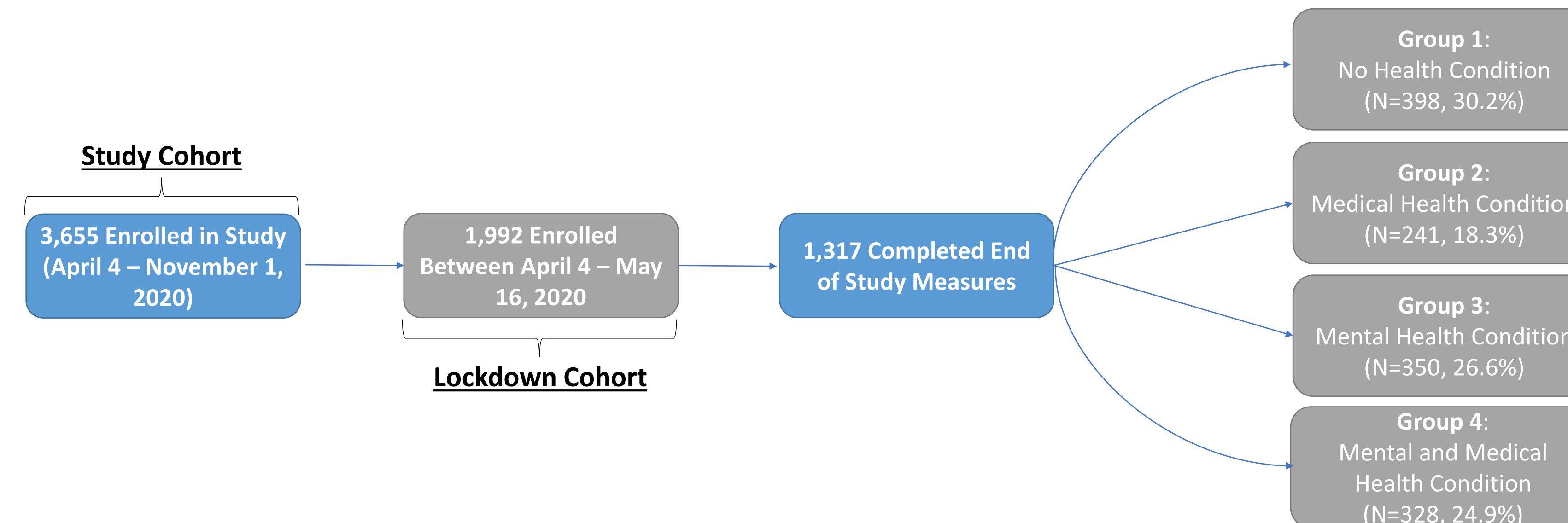
Results

Figure 1. The sample was restricted to participants enrolled during the lockdown period in spring 2020 to control for the changing landscape of pandemic-related stressors.

Table 1. Demographic characteristics. The No Health Condition group was used as the reference group. * <0.01 ** <0.001

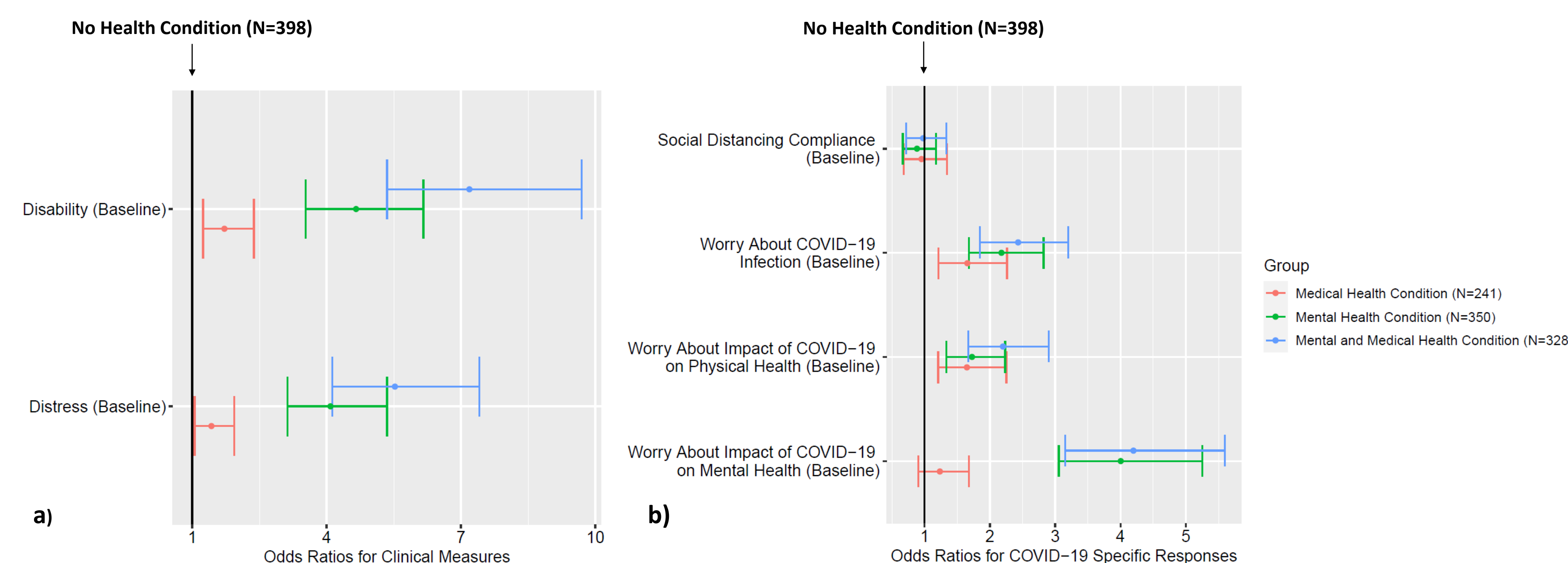|	All Participants (N=1,317)	No Condition (N=398)	Medical Health (N=241)	Mental Health (N=350)	Both (N=328)
Age, mean (SD)	48.0 (±14.7)	43.1 (±13.7)	57.6 (±14.1)**	42.7 (±12.4)	52.7 (±13.5)**
Female, n (%)	1,072 (81.4%)	323 (81.2%)	175 (72.6%)**	311 (88.9%)**	263 (80.2%)
White, n (%)	1,191 (90.4%)	334 (83.9%)	220 (91.3%)*	331 (94.6%)**	306 (93.3%)**
Income less than 50k, n (%)	266 (20.2%)	61 (15.2%)	37 (15.4%)	83 (23.7%)**	85 (25.9%)**

Figure 2: Ordinal logistic regression evaluating the relationship between pre-existing health condition status and (a) clinical and (b) COVID-19 specific outcomes upon study enrollment controlling for age, sex, and income.
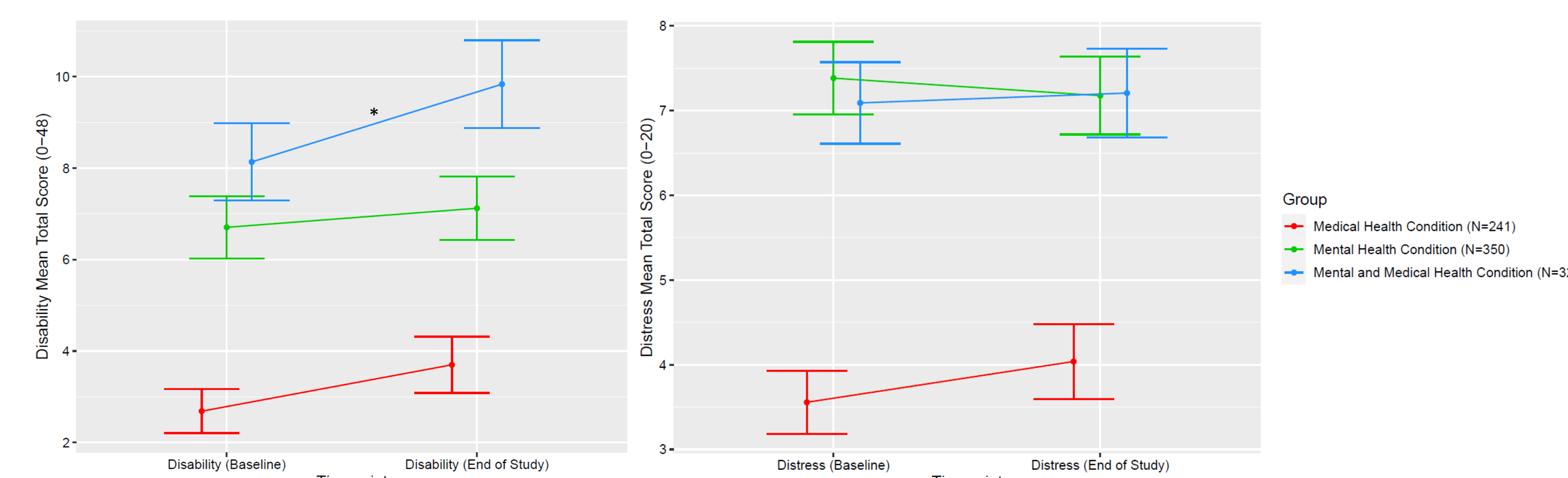

Figure 3: Change in disability and distress across six months. Linear regressions controlling for age, sex, and income were performed to compare slopes of change between groups with the No Health Condition group (N=398, **disability slope=0.64; distress slope=0.14**) as the reference group * p<0.05

Results

Table 2. Group differences in instrumental support, emotional support, loneliness, and delayed health care during the COVID-19 pandemic.

	No Condition (N=398)	Medical Health (N=241)	Mental Health (N=350)	Both (N=328)
Instrumental Support (0-32) Median	30	29	26	25
Emotional Support (0-32) Median	29	26.5	26	24
3-Item Loneliness (3-9) Median	4	5	6	6
Delayed Medical Care n (%)	201 (51.5%)	120 (49.8%)	202 (58.4%)	194 (60.1%)
Delayed Mental Health Care n (%)	20 (5.1%)	9 (3.7%)	58 (16.8%)	45 (13.9%)

Discussion

- We found positive associations between pre-existing medical, mental, and both conditions and negative clinical outcomes; a dose response relationship was observed (Figure 2a).
- Patterns in COVID-19 specific responses between groups suggest differential responses to COVID-19 stressors based on premorbid illness status (Figure 2b)
- Comparison of slopes of clinical outcomes among subgroups find persistent levels of disability and distress after 6 months; however, those with mental health conditions report consistently elevated levels relative to those without mental health conditions (Figure 3)
- Comparison of pandemic-related variables shows a similar dose-response relationship, suggesting that variables such as social support and loneliness may contribute to increased mental health symptoms (Table 2)

Limitations

- Absence of pre-pandemic data on study participants
- Online, self-report data on mental and medical history
- Participant demographics do not represent the general population or those most affected by COVID-19

Conclusions

- Individuals with pre-existing health conditions, particularly mental health conditions, are at increased risk for negative mental health outcomes during the COVID-19 pandemic
- Future analysis will (1) control for pandemic-related variables when comparing mental health outcomes between groups and (2) include data on mental health outcomes from additional study timepoints

References

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