

The Personal and Professional Impact of COVID-19 on Faculty and Staff at an Academic Institution and a Blueprint for the Future: A Multi-Methods Study

Emily Gottenborg (✉ emily.gottenborg@cuanschutz.edu)

University of Colorado Denver - Anschutz Medical Campus <https://orcid.org/0000-0001-6967-7843>

Amy Yu

University of Colorado Anschutz Medical Campus: University of Colorado - Anschutz Medical Campus

Roxana Naderi

University of Colorado Anschutz Medical Campus: University of Colorado - Anschutz Medical Campus

Angela Keniston

University of Colorado Anschutz Medical Campus: University of Colorado Denver - Anschutz Medical Campus

Lauren McBeth

University of Colorado Anschutz Medical Campus: University of Colorado Denver - Anschutz Medical Campus

Katherine Morrison

University of Colorado Anschutz Medical Campus: University of Colorado - Anschutz Medical Campus

David Schwartz

University of Colorado Denver School of Medicine

Marisha Burden

University of Colorado Anschutz Medical Campus: University of Colorado Denver - Anschutz Medical Campus

Research article

Keywords: COVID-19, pandemic, School of Medicine

Posted Date: November 18th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-106319/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background:

The Coronavirus Disease 2019 (COVID-19) caused unprecedented challenges within medical centers, revealing inequities embedded in the medical community and exposing fragile social support systems. While faculty and staff faced extraordinary demands in workplace duties, personal responsibilities also increased. The goal of this study was to understand the impact of the COVID-19 pandemic on personal and professional activities of faculty and staff in order to illuminate current challenges and explore solutions.

Methods:

This is a multi-methods, prospective, observational study of faculty and staff within the Department of Medicine at the University of Colorado, School of Medicine, comprised of four separate sites. Participants received a preliminary department-wide survey followed by an invitation to participate in focus groups addressing: (1) the impact on personal and professional activities, on (2) career advancement and promotion, and (3) potential strategies to assist faculty and staff. Qualitative analysis was performed for thematic content of the focus groups.

Results:

One hundred and fifty-one faculty and staff responded to the initial survey (11%), 28 faculty and staff participated in focus groups. Prior to the pandemic, male respondents spent 20.5 hours (+/- 18.2) on home responsibilities while women spent 28.8 hours (+/-17.9), and since, time spent on these responsibilities rose to 32.4 hours (+/- 18.4) and 49.6 hours (+/-29.0), respectively. Qualitative analysis of focus group transcripts revealed thematic domains: (1) changing domestic responsibilities, (2) changing workplace expectations, (3) the untenable nature of a return to "normal," (4) an opportunity to address pre-existing inequities and (5) internal conflict and guilt. Solutions were offered and included an emphasis on the importance of community.

Conclusions:

The COVID-19 pandemic created burdens for already challenged faculty and staff in both their personal and professional lives, and for women in particular. Swift action and advocacy by academic institutions is needed to support the lives and careers of our colleagues.

Background

Since the COVID-19 pandemic began it has become the disease with the highest mortality worldwide within a year,¹⁻³ impacting nearly every geographic location worldwide and all sectors of our society.^{3,4} In healthcare, COVID-19 has upended care delivery mechanisms, caused financial challenges,³ and highlighted the shortcomings of our emergency preparedness system. In response, the medical workforce

has had to adapt to extreme changes in the physical and structural norms of our work in order to provide necessary care to our communities.⁵⁻⁸ Just as the pandemic has exacerbated pre-existing racial, ethnic, and socioeconomic health disparities,^{9, 10} it has also intensified existing tensions in work-life balance. While all workers are facing increased stressors at home and in the workplace,^{11, 12} women¹³⁻¹⁸ and underrepresented minorities¹⁹ are thought to experience even more demands on their ability to balance their personal and professional responsibilities.

Over the past decade, we have recognized the advantages of a diverse workforce have striven to create one.²⁰⁻²⁶ The COVID-19 pandemic threatens these accomplishments. Early research and anecdotal reports suggest that women are being disproportionately affected by assuming more of the traditional household, caregiving, and educational work that was previously outsourced. Increased demands at home combined with expanding clinical demands make academic productivity and advancement less attainable for these already disadvantaged groups.

Previous literature has described a leaky pipeline, whereby women and underrepresented groups do not receive sufficient support to advance professionally.²⁷⁻³⁴ The marginally successful systems created to foster diversity, equity, and inclusion are fragile, and in the midst of a pandemic, these mechanisms of support may not receive the attention that is needed. Utilizing a multi-methods approach, leaders across our department sought to understand and characterize the personal and professional experience of faculty and staff during the COVID-19 pandemic, and to formulate solutions to address the issues faced.

Methods

Study Design: We utilized a multi-methods, prospective, observational approach, beginning with a preliminary survey that was sent to approximately 1209 faculty and 146 staff in the Department of Medicine at the University of Colorado (comprised of four separate sites: Denver Health, The Veterans Affairs Hospital, the Anschutz Medical Campus, and National Jewish Hospital) and completed between May 27 and June 4, 2020. These survey results informed the development of the question guide for focus groups and the selection of focus group participants. The survey was followed by nine focus groups conducted virtually, between July 28 and August 13, 2020. Questions focused on the following domains: 1) Changes to roles and responsibilities at work and at home, 2) Resources utilized to manage these changes and, 3) Suggestions for how the department or divisions could help (Appendix). Participants for both the survey and focus groups were recruited via email as well as advertisements made during Department-wide Town Hall meetings. Focus groups were held until thematic saturation was achieved and no new ideas emerged. This project was approved by the Colorado Multiple Institutional Review Board and was deemed non-human subject research.

Data Collection

Study materials collected include audio recordings and transcripts, all of which were de-identified. All materials were stored in encrypted files on secure servers available through the University of Colorado

HIPAA-compliant electronic shared folders.

Analysis

Focus groups were audio-recorded and transcribed verbatim. Four team members moderated the focus groups (AY, EG, MB, and RN), and two team members (LM and AK) took field notes. Team members (MB, AK, and LM) developed a preliminary codebook. All team members coded focus group transcripts and consensus was established by identifying and resolving differences (MB, AK, LM, EG, AY, and RN). The thematic analysis was conducted using an inductive method at the semantic level, allowing themes to emerge from the focus groups.³⁵ Member checking was conducted.

Results

A total of 151 faculty and staff completed the survey (11% response rate). Demographics are shown in Table 1. The majority of respondents were women, physicians, and faculty at the assistant or associate professor level. Respondents worked across clinical, research, and administrative settings, and for those who had clinical work, the average clinical Full Time Equivalent (FTE) was 0.7. Regarding promotion, 15% of respondents (n = 23) planned to go up for promotion this year, with half of these respondents (n = 11) stating that promotion would be impacted or delayed due to COVID-19 (Table 2).

Table 1
Demographics of Faculty and Staff within the Department of Medicine who responded to the Survey

N = 151	
Gender, N (%)	
Man (He, him)	35 (23)
Woman (She, her)	114 (76)
Prefer not to answer	2 (1)
Age Group, N (%)	
21–30	6 (4)
31–40	61 (40)
41–50	56 (37)
51–60	19 (13)
> 60	8 (5)
Prefer not to answer	1 (< 1)
Institution, N (%)	
Anschutz Medical Campus	116 (77)
Denver Health	17 (11)
Veterans Affairs	11 (7)
National Jewish	4 (3)
Presbyterian/St. Lukes	1 (< 1)
Other	1 (< 1)
Prefer not to answer	1 (< 1)
Employee type, N (%)	
Faculty	128 (85)
Staff	23 (15)
Academic Appointment - Faculty Only, N (%)	
Assistant Professor	63 (49)
Associate Professor	32 (25)
Instructor	14 (11)

	N = 151
Professor	19 (15)
Degree(s) (select all that apply), N (%)	
MD	96 (64)
DO	1 (< 1)
PhD	16 (11)
NP	7 (5)
PA	7 (5)
MPH/MS/MBA	37 (25)
BA	15 (10)
BS	9 (6)
Other	5 (3)
Prefer not to answer	2 (1)
Work Setting(s) (select all that apply), N (%)	
Inpatient	78 (52)
Outpatient	84 (56)
Research	30 (20)
Administrative Office	35 (23)
Other	9 (6)
Professional Time Realm(s) (select all that apply), N (%)	
Clinical	115 (76)
Research	74 (49)
Education	74 (49)
Administrative	71 (47)
Clinical FTE - If Clinical Professional Time Selected, Mean ± SD	0.76 ± 0.3

Table 2

Survey responses specific to promotion from the 'Caregiving in COVID-19 Department of Medicine Survey' to Faculty and Staff

	N = 151	N = 35	N = 114
Promotion this Year, N (%)		Man (He/him)*	Woman (She/her)*
Yes	23 (15)	7 (20)	16 (14)
No	121 (80)	28 (80)	92 (81)
Prefer not to answer	7 (5)	0 (0)	6 (5)
	N = 23	N = 7	N = 16
Promotion Impacted - If Promotion this Year, N (%)			
Yes	11 (48)	4 (57)	7 (44)
No	11 (48)	3 (43)	8 (50)
Prefer not to answer	1 (4)	0 (0)	1 (6)
	N = 23	N = 7	N = 16
Request Promotion Extension - If Promotion this Year, N (%)			
Yes	5 (22)	0 (0)	5 (31)
No	12 (52)	5 (71)	7 (44)
Uncertain	5 (22)	2 (29)	3 (19)
Prefer not to answer	1 (4)	0 (0)	1 (6)

Seventy-three percent of respondents noted that they had assumed additional responsibilities during the pandemic. The majority of these responsibilities included: caregiving for children and the elderly, education (including homeschooling, tutoring), meal coordination (including grocery shopping, preparation, cooking), housework, and pet care (Table 3). For those who answered both questions, time spent per week on these additional responsibilities increased for both women and men during the pandemic with a more notable increase reported by women (18.6 hours compared to 11.7 hours more per week, $p = 0.0467$) and for instructors as compared to other academic rank.

Table 3
Survey responses related to 'Additional Home Responsibilities,' from the 'Caregiving in COVID-19 Department of Medicine Survey'

Assumed Additional Responsibilities during COVID-19 Pandemic, N (%)	Prior to COVID-19 Pandemic		Post COVID-19 Pandemic	
	Man (He/him)	Woman (She/her)	Man (He/him) N = 35	Woman (She/her) N = 114
Yes	N/A	N/A	25 (71)	83 (73)
No	N/A	N/A	10 (29)	31 (27)
	Responsibilities at Home (select all that apply), N (%)		Additional Responsibilities at Home (select all that apply), N (%)	
Responsibilities	N = 35	N = 114	N = 25	N = 83
Caregiving - Children	26 (74)	77 (68)	19 (76)	59 (71)
Caregiving - Elderly relative(s)	2 (6)	12 (11)	2 (8)	9 (11)
Caregiving - Disabled relative(s)	0 (0)	1 (1)	0 (0)	2 (2)
Education (including homeschooling, tutoring, etc.)	3 (9)	12 (11)	15 (60)	55 (66)
Meals (including grocery shopping, preparation, cooking, etc.)	30 (86)	109 (96)	15 (60)	48 (58)
Housework (including cleaning of home, lawn maintenance, etc.)	34 (97)	106 (93)	14 (56)	49 (59)
Pet care	21 (60)	67 (59)	8 (32)	29 (35)
Other	2 (6)	6 (5)	1 (4)	3 (4)
Time Spent on at Home Responsibilities	N = 35	N = 113	N = 22	N = 81
Hours per week, Mean ± SD	20.5 ± 18.2	28.8 ± 17.9	32.4 ± 18.4	49.6 ± 29.0
Difference in hours per week, Mean ± SD ²			11.7 ± 9.3	18.6 ± 15.3
¹ excludes participants who selected gender response of 'prefer not to answer' (N = 2)				
² limited to participants who reported hours both pre- and post-COVID (Men: 22; Women: 80)				

28 participants agreed to participate in follow-up focus groups where the themes identified in the survey were explored further. Numerous key themes were identified.

Key themes

Changing Domestic Roles and Responsibilities

Faculty and staff reported that their domestic roles and responsibilities dramatically increased during the COVID-19 pandemic. They specifically pointed to the demands of in-home education (keeping up with academic content and helping children adapt to online learning), full-day childcare, managing day-to-day needs for aging family members, and household work. Some healthcare providers reported difficulty in finding help because they were perceived to be at high risk for COVID-19 transmission.

"It was really, really hard to fit all of that in. We are not trained teachers. I don't know how to teach elementary school, and you know I'm trying to do my regular work during the day because that's what everybody else is expecting – to hear back from me and have action happen but then that means that I have to basically put her school on the back burner until later in the afternoon. So, I would start work at like five or six and then I would try and knock off at least by two or three so that I can then help her with school but by that time I'm fried. Lots of tears, you know." (Focus Group 4)

While most focus group participants described increasing stress with these new responsibilities, some faculty and staff found them as opportunities to reconnect with their children or elderly family.

"I think my kids are really enjoying being home with mom and dad as much as they are. When we first started going back to the hospital after that initial complete lockdown phase, my kids were flabbergasted that I was leaving the house. "No, mommy. Don't go." I definitely think the bond is much stronger now". (Focus Group 5)

Changing Workplace Roles, Responsibilities, and Expectations

Faculty and staff described that the nature of their work has changed with an uncertain path towards advancement. They reported taking on additional clinical and administrative responsibilities, learning new technologies, forgoing academic productivity to secure their division's financial solvency, and navigating how to do their work in unfamiliar environments.

"In the early days, I was really heavily involved in our institutional preparation and response, and really worked I think in those first two weeks, 17 days of 12 hour days in a row. I didn't come home till nine o'clock at night, most nights, just trying to help our institution prepare. And then, immediately on the heels of that really long stretch, I got sick. And I was sick with COVID for about two weeks and was home up in my attic where I am now. I'm isolated away from my two kids and my husband, who's also a physician and whose work did not get lighter during COVID. And so, I think what kind of what happened in those early days, like all my other stuff got put on hold. And even when I was home sick, I was working probably 40 hours a week still just trying to help my institution be prepared." (Focus Group 3)

“There is such a push for clinical productivity because of finances, you know there’s a chance that our research is going to get put to the wayside...” (Focus Group 6)

The uncertainty about the duration of evolving changes has created anxiety around defining the limits of one's service to their institutions and reluctance to take on new opportunities. Safety concerns for personal and family health also emerged.

“I think in terms of the work responsibility, it has been hard, being a Hospitalist, COVID completely changed everything I knew and created an enormous amount of anxiety, particularly in March and April. We just didn’t know what we were doing and if it was going to keep us safe and so I think during that time of this year, there was this enormous stress and anxiety around just continuing to go into work and having – you know just caring for essentially, only COVID patients and having this huge loss of like what my job used to be.” (Focus Group 8)

“I worried professionally that there are opportunities happening, that some people who are feeling overwhelmed and feeling the more burden of caregiving are going to - or we are going to pass by.” (Focus Group 2)

Faculty frequently brought up stress surrounding promotion timelines, with many expressing fear of missed opportunities for advancement due to competing workplace and personal responsibilities. Faculty involved in research or scholarship reported stress about meeting grant timelines and fear about job security given delays in productivity. Lack of perceived flexibility regarding these timelines and transparency about available support mechanisms added to faculty stress.

“I will say that’s probably my biggest fear from a career perspective ... is that because I have kids and because people recognize that you know there has to be more flexibility and that I may not be available at the same time, that I will not be given opportunities down the road that I otherwise would have received or been able to – you know to apply for. I will be viewed in a different light because of how this has changed my ability to be present. I don’t think it’s that the work product itself is significantly less, but it’s just my availability is not the same– that’s a huge fear of mine. (Focus Group 7)

“Except, fundamentally I know I am underpaid compared to my colleagues and that pisses me off. And so, I don't want to delay (promotion)...I'd like to have the option to delay if I get to it and realize, I'm not where I need to be. But I don't want to defer getting an increased salary for a year just because I might need that. (Focus Group 1)

The Untenable Nature of a Return to “Normal”

Frontline faculty and staff expressed concern over the ability to maintain their professional duties while concurrently caregiving at home, especially as there has been a shift toward returning to a new normal of day-to-day operations. Interviewees described feeling mounting pressure to return to their previous level of productivity, given that their mentors or leaders assume they have more time since on-campus activities have lightened. This messaging has been upsetting because of the lack of recognition of

ongoing increased domestic duties. They also describe that the blurring of personal and professional boundaries has created longer days, exacerbating unrealistic expectations of academic productivity.

"I think a huge thing is there's not a separation between work and home at all anymore. It just kind of all blends together. And I feel like the evening hits and it's only when the kids complain how hungry they are that I think, "Okay, I got to stop and make dinner." There's not that like, "I'm home from work now. Let's have a little family time before I go back to work." It's just, you keep working until - until you don't." (Focus Group 3)

"If the system was challenging and this close to breaking to begin with, then I think the idea of going back to the way things were is a futile and misguided effort." (Focus Group 1)

"It just seems to me now like it's a gas, everything is a gas, and it's just expanding to fill the space. And so, there's no more boundaries of when I'm doing one thing or the other thing. It's like I'm doing laundry while I'm writing while I'm scheduling while I'm in between talks I'm giving, and all of it is just filling all the space." (Focus Group 3)

An opportunity to address pre-existing inequities

Faculty and staff alike recognized opportunities related to the pandemic. Processes and procedures that would have taken time to develop were rapidly instated, eliminating some of the bureaucracies of our healthcare systems. Participants were hopeful that our systems are not put back together as they were before.

"This radical disruption or radical innovation, we should really seize on this, this is an opportunity and we can right some wrongs. And I think if we open ourselves up to that, I think that, you know, we start to tackle our vast inequity problems in terms of gender and our huge glaring diversity problems. And we've made great strides in the 14 years I've been faculty, but those strides are so minimal in comparison to the journey that we have to take on those lines." (Focus Group 1)

Suffering from Internal Conflict

Finally, faculty and staff reported conflicted emotions around the anxiety, stress and challenges that they were facing, while acknowledging that others in the community are suffering to a much greater extent. They felt privileged and lucky to have a job, and were apologetic and guilt-ridden regarding sharing their experience.

"I'm a big fan of this concept of dialectical thinking that you can at the same time be feeling the emotions of anger and frustration and sort of injustice about sort of sometimes how we feel we're being treated and then on the other hand, recognize how fortunate I am and how you know positives that are going along at the same time, and that it – you know from a resiliency standpoint, it's helpful to be able to acknowledge both levels of emotion and realize that you don't have to live in one of those buckets." (Focus Group 9)

Solutions

Faculty and staff were eager to offer solutions, and most were centered on the sense of community that arose from the pandemic and optimism around the support they received from their medical and non-medical communities.

“One of the positives that has certainly come out of this from my perspective is the community, the sense of community. Early on one of our colleagues reached out and said, ‘Anybody who needs a break,’ and it was to the moms. “Anybody who needs to give up a shift to be able to stay home with your kids let me know. I’m happy to help.” And so it was just really thoughtful and created a really nice sense of community that we’re all in this together. Everybody’s struggling with the same things, so I think from that perspective, I’ve really seen positive changes.” (Focus Group 7)

Other areas of focus for solutions included offering resources for parents/guardians for school age children and elder care, supporting innovation in defining the new normal, allowing flexible timelines for promotion and grants, supporting virtual services, and offering reassurances around financials (Table 4).

Table 4

Proposed solutions directed towards areas of most concern, provided by focus group participants

Area of Concern	Recommendation	Resources
Parents/guardians with school age/younger children	Emergency child care services (back up, crisis care) Daycare options Educational support	Partnership with local companies and schools; stipend support for those in need; administrative support for coordination of learning groups; ability for employees to pool sick/vacation days for those in need; matching programs (i.e. database to connect faculty and staff with similar needs)
Elder care support	Support groups such as psychologist/peer groups/expert groups (geriatricians/palliative care) to help with planning and experiences	Time for support groups; matching programs
Returning back to "normal" to quickly	Develop return to work plans that are innovative and harness the positives from current experience	Divisions to collaboratively work with their teams to develop revised work policies that promote workplace flexibility and sustainability
Flexibility (i.e. timelines for funding agencies, promotions, and work schedules)	Work with funding agencies to create flexible timelines/understanding of options with grants; offer deferrals/support/time to prepare dossiers for promotions when needed	Designate institutional lead to work with funding agencies on innovative and supportive timelines; develop expert panel; offer additional support for dossier preparation; flexibility with work schedules
FMLA/PTO for COVID illness	Message faculty and staff about already existing benefits	N/A
Financials and other uncertainties	Clear communications; continued transparency	N/A
Resiliency/coping	Support programs	Support programs; advertisements of offerings; acknowledging the struggles and potential solutions through focus groups

Discussion

The important findings of this study are: (1) the pandemic highlighted the many challenges and disparities faculty and staff have encountered during the pandemic; (2) women are disproportionately facing increases in caregiving duties and it may be impacting their promotion trajectory; (3) there are multiple institutional factors adding to faculty and staff stress and well-being; and (4) there are multiple solutions that institutions and communities can implement to help support these critical members of our workforce.

Literature in the lay press has taken note that women have been adversely impacted by the pandemic. Women have been the predominant frontline response to the pandemic, have faced disproportionate increases in caregiving duties,¹⁵⁻¹⁷ and this is impacting the advancement potential in their careers.¹⁷ Prior to the pandemic, women and underrepresented minorities already faced disparities in promotion, leadership roles, recognition, authorship, pay, and speaking opportunities.^{25-28, 30-34, 36-39} Institutions committed to eliminating these disparities have created programs and intensified resources, yet prior to the pandemic, women made up only 16% of medical school deans and 18% of division chairs.⁴⁰

Literature supports that more diverse workforces impact the bottom line,²⁴ yet our society has not fully embraced the support systems needed to ensure that women and under-represented minorities have equal opportunities in the workplace. This paper highlights both the urgency and the opportunity to address longstanding inequities, the dearth of supportive policies, and the unrealistic expectations for those who work in healthcare.

Our work has several strengths. This is one of the first reports coming from a major academic medical center that consists of four separate institutions. We have moved beyond anecdotal reports of the impact of the pandemic and have assessed the effects in a systematic way. Our research also has several limitations. Our survey was conducted during the pandemic and thus had a limited survey response rate. There was a disproportionately higher number of women who participated in both the survey and the focus groups possibly in part because of women's roles in both caregiving and in the pandemic. We did aim to ensure as diverse of opinions as possible by opening up the survey and focus groups to all Department members, while excluding learners, which is an area of future discovery.

Conclusions

The COVID-19 pandemic has brought to light the heavy burdens on faculty and staff, many of whom are frontline responders. Women seem to disproportionately face increased caregiving and household duties; and this data suggests the pandemic may impact their opportunity for promotion and the trajectory of their careers. There are numerous solutions that could be implemented to help mitigate the impact of COVID-19 on faculty and staff.

Abbreviations

COVID-19

Coronavirus 2019

HIPAA

Health Insurance Portability and Accountability act of 1996

Declarations

Ethics Approval: This study was deemed exempt by the local ethics committee, the Colorado Multiple Institutional Review Board, as it did not involve patient data and no formal ethics approval was required. Each participant provided verbal consent prior to participating in the study, which was approved by the ethics committee.

Consent for publication: Verbal consent was provided by each participant in this study prior to their participation.

Availability of data and materials: The survey and qualitative data generated and analyzed for this study are not publicly available in order to preserve participant confidentiality and meet regulatory requirements from the authorizing institutional review board. Data may be available from the corresponding author upon reasonable request.

Competing interests: The authors have no financial or non-financial competing interests to declare.

Funding: There was no funding support for this research.

Authors Contributions: EG and AY made substantial contributions to the conception and design of the work, the acquisition, analysis and interpretation of the data, and drafting and revising the work. MB and DS made significant contributions to the conception and design of the work and revising the work. RN and KM made substantial contributions to the acquisition and analysis of the data and revising the work. AK and LM made substantial contributions to the acquisition, analysis and interpretation of the data. All authors read and approved the final manuscript.

Acknowledgements: We would like to acknowledge Dr. Yael Aschner, MD,^{2,3} and Dr. Sarah Jolley,^{2,3} MD for their contributions to this manuscript.

References

1. Global deaths due to various causes and and COVID-19. Tony Nickonchuk. September, 2020. <https://public.flourish.studio/visualisation/2562261/>. Accessed August 25, 2020.
2. Wiersinga WJ, Rhodes A, Cheng AC, Peacock SJ, Prescott HC. Pathophysiology, Transmission, Diagnosis, and Treatment of Coronavirus Disease 2019 (COVID-19): A Review. *JAMA*. 2020;324(8):782-793
3. Nicola M, Alsafi Z, Sohrabi C, et al. The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *Int J Surg*. 2020;78:185-193.
4. Ziv S. Coronavirus Pandemic Will Cost U.S. Economy \$8 Trillion. *Forbes*. Accessed August 25, 2020. <https://www.forbes.com/sites/shaharziv/2020/06/02/coronavirus-pandemic-will-cost-us-economy-8-trillion/#4a3ef50e15e4>.
5. Bowden K, Burnham EL, Keniston A, et al. Harnessing the Power of Hospitalists in Operational Disaster Planning: COVID-19. *J Gen Intern Med*. 2020; 35:2732-2737.

6. Hick JL, Einav S, Hanfling D, et al. Surge capacity principles: care of the critically ill and injured during pandemics and disasters: CHEST consensus statement. *Chest*. 2014;146(4 Suppl):e1S-e16S.
7. Einav S, Hick JL, Hanfling D, et al. Surge capacity logistics: care of the critically ill and injured during pandemics and disasters: CHEST consensus statement. *Chest*. 2014;146(4 Suppl):e17S-43S.
8. Garg M, Wray CM. Hospital Medicine Management in the Time of COVID-19: Preparing for a Sprint and a Marathon. *J Hosp Med*. 2020;15(5):305-307.
9. Webb Hooper M, Napoles AM, Perez-Stable EJ. COVID-19 and Racial/Ethnic Disparities. *JAMA*. 2020;323(24):2466–2467.
10. Belanger MJ, Hill MA, Angelidi AM, Dalamaga M, Sowers JR, Mantzoros CS. Covid-19 and Disparities in Nutrition and Obesity. *N Engl J Med*. 2020;383(11):e69
11. Kniffin KM, Narayanan J, Anseel F, et al. COVID-19 and the workplace: Implications, issues, and insights for future research and action. *Am Psychol*. 2020.
12. Wong EL, Ho KF, Wong SY, et al. Views on Workplace Policies and its Impact on Health-Related Quality of Life During Coronavirus Disease (COVID-19) Pandemic: Cross-Sectional Survey of Employees. *Int J Health Policy Manag*. 2020.
13. King T, Hewitt B, Crammond B, Sutherland G, Maheen H, Kavanagh A. Reordering gender systems: can COVID-19 lead to improved gender equality and health? *Lancet*. 2020;396(10244):80-81.
14. Collins C, Landivar LC, Ruppanner L, Scarborough WJ. COVID-19 and the Gender Gap in Work Hours. *Gend Work Organ*. 2020.
15. Perelman, D. In the COVID-19 Economy, You Can Have a Kid or a Job. You Can't Have Both. The New York Times. July 2, 2020. Accessed August 25, 2020. <https://www.nytimes.com/2020/07/02/business/covid-economy-parents-kids-career-homeschooling.html>.
16. Burbank M. COVID-19 pits full-time parenting against full-time work, and women are the hardest hit. The Seattle Times. August 17, 2020. Accessed August 25, 2020. <https://www.seattletimes.com/life/covid-19-pits-full-time-parenting-against-full-time-work-and-women-are-the-hardest-hit/>.
17. LeanIn.Org and SurveyMonkey. Women are maxing out and burning out during COVID-19. Accessed August 25, 2020. <https://leanin.org/article/womens-workload-and-burnout>.
18. Dias FA, Chance J, Buchanan A. The motherhood penalty and The fatherhood premium in employment during covid-19: evidence from The united states. *Res Soc Stratif Mobil*. 2020;69:100542.
19. Bui DP, McCaffrey K, Friedrichs M, et al. Racial and Ethnic Disparities Among COVID-19 Cases in Workplace Outbreaks by Industry Sector - Utah, March 6-June 5, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(33):1133-1138.
20. Carr PL, Gunn C, Raj A, Kaplan S, Freund KM. Recruitment, Promotion, and Retention of Women in Academic Medicine: How Institutions Are Addressing Gender Disparities. *Womens Health Issues*. 2017;27(3):374-381.

21. Carr PL, Raj A, Kaplan SE, Terrin N, Breeze JL, Freund KM. Gender Differences in Academic Medicine: Retention, Rank, and Leadership Comparisons From the National Faculty Survey. *Acad Med*. 2018;93(11):1694-1699.
22. Choo EK, van Dis J, Kass D. Time's Up for Medicine? Only Time Will Tell. *N Engl J Med*. 2018;379(17):1592-1593.
23. Northcutt N, Papp S, Keniston A, et al. SPEAKers at the National Society of Hospital Medicine Meeting: A Follow-UP Study of Gender Equity for Conference Speakers from 2015 to 2019. The SPEAK UP Study. *J Hosp Med*. 2020;15(4):228-231.
24. Rock D and Grant H. Why Diverse Teams Are Smarter. *Harv Bus Rev*. Available at <https://hbr.org/2016/11/why-diverse-teams-are-smarter> Accessed July 24, 2019.
25. Butkus R, Serchen J, Moyer DV, et al. Achieving Gender Equity in Physician Compensation and Career Advancement: A Position Paper of the American College of Physicians. *Ann Intern Med*. 2018;168(10):721-723.
26. Raj A, Kumra T, Darmstadt GL, Freund KM. Achieving Gender and Social Equality: More Than Gender Parity Is Needed. *Acad Med*. 2019;94(11):1658-1664.
27. Abelson JS, Wong NZ, Symer M, Eckenrode G, Watkins A, Yeo HL. Racial and ethnic disparities in promotion and retention of academic surgeons. *Am J Surg*. 2018;216(4):678-682.
28. Ash AS, Carr PL, Goldstein R, Friedman RH. Compensation and advancement of women in academic medicine: is there equity? *Ann Intern Med*. 2004;141(3):205-212.
29. Blazey-Martin D, Carr PL, Terrin N, et al. Lower Rates of Promotion of Generalists in Academic Medicine: A Follow-up to the National Faculty Survey. *J Gen Intern Med*. 2017;32(7):747-752.
30. Boiko JR, Anderson AJM, Gordon RA. Representation of Women Among Academic Grand Rounds Speakers. *JAMA Intern Med*. 2017;177(5):722-724.
31. Burden M, Frank MG, Keniston A, et al. Gender disparities in leadership and scholarly productivity of academic hospitalists. *J Hosp Med*. 2015;10(8):481-485.
32. Fang D, Moy E, Colburn L, Hurley J. Racial and ethnic disparities in faculty promotion in academic medicine. *JAMA*. 2000;284(9):1085-1092.
33. Pololi LH, Civian JT, Brennan RT, Dottolo AL, Krupat E. Experiencing the culture of academic medicine: gender matters, a national study. *J Gen Intern Med*. 2013;28(2):201-207.
34. Silver JK, Slocum CS, Bank AM, et al. Where Are the Women? The Underrepresentation of Women Physicians Among Recognition Award Recipients From Medical Specialty Societies. *PM R*. 2017;9(8):804-815.
35. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology* 2006;3:77-101.
36. Choo EK, Bangsberg DR. Equity in Starting Salaries: A Tangible Effort to Achieve Gender Equity in Medicine. *Acad Med*. 2019;94(1):10.

37. Pololi L, Cooper LA, Carr P. Race, disadvantage and faculty experiences in academic medicine. *J Gen Intern Med.* 2010;25(12):1363-1369.
38. Hingle ST, Kane GC, Butkus R, Serchen J, Bornstein SS. Achieving Gender Equity in Physician Compensation and Career Advancement. *Ann Intern Med.* 2018;169(8):591.
39. Peek ME, Kim KE, Johnson JK, Vela MB. "URM candidates are encouraged to apply": a national study to identify effective strategies to enhance racial and ethnic faculty diversity in academic departments of medicine. *Acad Med.* 2013;88(3):405-412..
40. Association of American Medical Colleges. The State of Women in Academic Medicine: The pipeline and pathways to leadership, 2013-2014. https://www.hopkinsmedicine.org/women_science_medicine/_pdfs/The%20State%20of%20Women%20in%20Academic%20Medicine%202013-2014%20FINAL. Pdf. Accessed August 28, 2020.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Appendix.docx](#)
- [Appendix.docx](#)