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# What Are Work-Related Predictors of Post-COVID-19 Home and Family Work Roles? A Cross-Sectional Survey

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**Objective:** To determine the extent to which pre-and post-COVID-19 work-related factors can explain post-COVID-19 home and family work roles. **Methods:** This study was a cross-sectional survey. The primary outcome measure was the Home and Family Work Roles Questionnaire. Descriptive statistical methods and multiple regression analyses were run. The significant predictors were further probed in a one-way analysis of covariance (ANCOVA) model with a Tukey posthoc correction. **Results:** In our sample of 1447 participants, the two significant predictors of post-COVID-19 home and family work roles were pre-pandemic paid job status ( $F [3, 1401] = 5.66, P < 0.001$ ), and pre-COVID-19 home and family work roles ( $F [1, 1401] = 2509.26, P < 0.001$ ). **Conclusion:** Greater pre-pandemic home and family role responsibilities, full-time and part-time employment pre-COVID-19 were associated with greater post-COVID-19 home and family responsibilities.

**Keywords:** COVID-19, family responsibilities, work-related changes, work-related family roles

In March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic.<sup>1</sup> As the COVID-19 pandemic unfolded, many countries worldwide required their population to adhere to a set of social distancing guidelines, including quarantine and isolation protocols, school closures, travel bans, curfews, stay-

at-home orders, and workplace closures.<sup>2-6</sup> Consequently, many workers and students became familiarized with the concept of “working from home,” “remote work,” or “remote learning,” many for the first time.<sup>7</sup> Further, the global economy and financial markets were adversely affected by the pandemic and public health crisis, leading to large-scale loss of jobs worldwide.<sup>8-10</sup> Many people either lost their jobs or adapted to the new restrictions by working/studying from home.<sup>11</sup>

The strict lockdown policies imposed by governments suddenly changed the daily lives of their citizens.<sup>4,12</sup> In addition to the economic disruptions caused by the stay-at-home policies, social outcomes and relationships within families were impacted.<sup>13</sup> Caregiving responsibilities can change dramatically when family members are restricted from seeing a family member or friend for whom they previously provided care or when they are forced to take on new caregiving responsibilities in response to pandemic policies.<sup>14</sup> Home and family work roles and responsibilities were further affected as the boundaries between home, school, and work became blurred.<sup>14,15</sup>

Since the COVID-19 pandemic did not occur at a single point in time and has still not ended, in this article, the term post-COVID-19 refers to when COVID-19 was officially declared a pandemic. Documenting the extent to which home and family work roles post-COVID-19 can be explained by the change in work status is essential because it can affect job security, potential work-family conflicts, cooperation, and tensions, employees’ attitudes and behavior, quality of life, and mental health during and after the COVID-19 pandemic.<sup>13,16,17</sup> Despite the numeric studies published in 2020 and 2021 on the changes in the work hours, employment status, and schedule patterns, there is a clear need for studies addressing how these changes in work were subsequently related to the changes in the home and family work roles. Therefore, this study aimed to understand whether post-COVID-19 home and family work roles can be explained by pre-and post-COVID-19 paid job status, current employment status, and pre-COVID-19 home and family work roles.

The theoretical framework of this study was based on the “work-family conflict” model, proposed by Greenhaus and Beutell in 1985.<sup>18</sup> In their extensive literature review, Greenhaus and Beutell indicated that the sources of the work-family conflict could be attributed to “(a) time devoted to the requirements of one role makes it difficult to fulfill requirements of another; (b) strain from participation in one role makes it difficult to fulfill requirements of another; and (c) specific behaviors required by one role make it difficult to fulfill the requirements of another.”<sup>18</sup> Based on this, we hypothesized that the drastic changes in the work status caused by the COVID-19 pandemic, would subsequently affect the amount of work people are contributing as parts of their home and family responsibilities and roles.

## MATERIALS AND METHODS

### Design and Ethics

This was a cross-sectional observational study using a quantitative approach to elicit views on the work-related predictors of the home and family work roles prior to and post lockdown. This study was approved by the Western University’s Health Sciences

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**Clinical significance:** This study had a large sample size. The data were collected through an online survey during COVID-19 lockdowns and included participants who were diverse in gender, age, ethnicity, and employment status. The results of this study have important implications for public health policymakers.

**Ethics:** This study was approved by the Western University’s Health Sciences Research Ethics Board (HSREB), on June 25, 2020 (project ID number: 115790).

**Consent for publication:** Not applicable.

**Informed consent:** Informed consent was obtained from all patients for being included in the study.

**Availability of data and materials:** Data are available from the corresponding author upon reasonable request.

**Competing interests:** The authors declare that they have no competing interests.

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**Authors’ contributions:** All authors provided substantial contribution to conception and design of the project. H.S., J.F., and J.M. were responsible for survey development and data collection. A.D. was responsible for data analysis and drafted the manuscript in consultation with J.M. All authors contributed to the revision of the original draft. All authors approved the final version and accepted responsibility for the integrity of the manuscript.

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Research Ethics Board (HSREB) on June 25, 2020 (project ID number: 115790). All patients provided written informed consent before participation in the study.

## Participants and Recruitment

This article draws a subsample of  $n = 1447$  participants from a global survey of  $n = 1847$  conducted during the COVID-19 lockdown. Recruitment began on June 26, 2020 and stopped on August 31, 2020. We selected and analyzed the participants who responded to questions from the Home and Family Work Roles Questionnaire for both pre- and post-COVID-19 components of the survey and excluded 401 participants who did not respond to these questions for the two-time points. The eligibility criteria for participation in this study included participants who were at least 18 years old, were able to read and write in English and were cognitively able to provide informed consent. We did not impose any restrictions on the country of residence, nationality, ethnicity, gender, sex, marital status and household numbers, and work status of the participants.

This study's data were collected through an online Qualtrics survey. We adhered strictly to the social distancing guidelines, and we used virtual platforms to recruit the participants. We followed a multi-faceted recruitment strategy, as approved by the Western University's HSREB. The researchers, Hand and Upper Limb Centre (HULC) graduate students, and the immediate contacts of the researchers posted study advertisements on their Facebook and Instagram private pages. Study ads were also posted on Twitter, Kijiji, Craigslist, Western University mailing lists and newsletters, and WhatsApp. Moreover, the researcher used HULC's official Instagram, Twitter, and Facebook accounts to post the study advertisements. Further, the researchers reached out to several Facebook pages and asked the page administrators to post the study on their pages.

All the participants were asked to read an information sheet and provide informed consent before entering the survey. The information sheet explained the purpose of the study in lay language, types of questions that would be asked, benefits, risks, confidentiality, withdrawing from the study, etc. No personal identifying information was collected at any point during the survey.

## Measures

### Home and Family Work Roles Questionnaire

To obtain information on the unpaid work roles, we used a 19-item questionnaire. This questionnaire was designed and developed previously by one of the research team members (J.M.). The original questionnaire had 18 questions, and we added one item on supervise children with homework to capture how participants may have changed their roles in supervising children while children undertook learning in the home/online amid school closures. The respondents were to fill in the questionnaire twice: once referring to before the Covid-19 pandemic began (before March 11, 2020), and a second time referring to after the Covid-19 pandemic began (after March 11, 2020).

The exact wording of the question for home and family work roles before COVID-19 was "Think about the work you did to take care of your home and family BEFORE the COVID-19 pandemic (before March 11, 2020). Please do not count the work done by anyone else (family, friends, spouses, paid staff, etc.). Slide the scale to represent the percent of the work you did. If the question does not apply to you (for example you do not have children), choose *not applicable*." The 19 items of the questionnaire were house cleaning (floors, dishes, bathroom, etc), outdoor cleaning (garage, garbage, windows, etc), laundry, home decorating (painting, wallpapering, etc), home repairs (install doors or lights, fix the bathroom, etc), mow the lawn, garden (plant, weed, etc), prepare meals, shop for groceries and supplies, drive the family to appointments and activities, arrange family appointments and activities, maintain vehicles (repair, change

oil, clean, etc), help children with homework, supervise children with homework, care for children in the home, care for children when sick, care for other family members (parent, spouse, or others), earn family income, and manage family finance/bills. Each of these 19 items was rated on a scale of 0% to 100%, with 10% intervals. The responses were added together and averaged to create a single score for before COVID-19 home and family work roles.

The items and response options for home and family work roles following the start of the pandemic were identical to those for before the start of the pandemic. The exact question was "think about the work you did to take care of your home and family AFTER the COVID-19 was declared a pandemic (after March 11, 2020)." Like the pre-COVID-19, the responses to this question were added together and averaged to arrive at a single score for home and family work roles after COVID-19, ranging from 0 to 10.

### Current Employment Status

The participants were asked to describe their current employment status. The response options were paid employee, self-employed, laid off, stay-at-home parent/caregiver, student, retired, unable to work due to disability, other (please specify).

### Paid Job Status Before and During COVID-19

In two subsequent questions, the participants were asked if they had a "paid" job before and during COVID-19. The response options for both questions were: (1) yes, full-time (more than 20 hours per week), (2) yes, part-time (20 or fewer hours per week), (3) no, (4) other (please specify).

### Working from Home

The participants were asked, "as a result of the pandemic, do you have to work from home?" The response options were designed to capture all the possible range of scenarios, which were: with a similar workload, with a greater workload, with a lighter workload, I still go into my workplace, I lost my job, and I have always worked from home.

### Gender, Age, and Ethnicity

As part of the descriptive statistics, the respondents were asked about their age, ethnicity, and the gender with which they identified. The response options for gender were man, woman, non-binary, agender, other (specify if you wish). Moreover, they were asked to report their age in years at a continuous level.

### Statistical Analyses

We explored and reported the descriptive statistics of the measures: the average scores on the Home and Family Work Roles Questionnaire for both pre- and post-COVID-19, the current employment status, paid job status before and during COVID-19, working from home status, gender, and age. In case of any participants not responding to the Home and Family Work Roles Questionnaire (missing data), we case-wise deleted them.

Standard multiple regressions were used to analyze and predict the post-COVID-19 home and family work roles. The dependent variable was the post-COVID-19 home, and family work roles average scores, measured at a continuous level. The independent variables in this analysis were (1) current employment status (paid employee, self-employed, laid off, stay-at-home parent/caregiver, student, retired, unable to work due to disability, other); (2) paid job status before COVID-19 (full-time, part-time, unemployed, other), (3) paid job status after COVID-19 (full-time, part-time, unemployed, other); (4) pre-COVID-19 home and family work roles.

The assumptions of multiple regression, including the linearity, normality and independence of residuals, no multicollinearity, and homoscedasticity, were checked and established. For the multiple regression analysis, we reported the regression coefficients as

well as their 95% confidence intervals (95% CI) for all significant and non-significant variables. The overall model fit was assessed by the adjusted  $R^2$  (adj.  $R^2$ ). For this multiple regression analysis, Jamovi statistical analysis software defined a reference category for each of the nominal independent variables, a procedure also known as dummy coding. The reference category for current employment status was the “paid employee” category. Further, the reference category for both the pre- and post-COVID-19 paid job status was the “other” category. Lastly, we computed the effect sizes of each independent variable in the model by using standardized estimates. The choice of the reference category for the dummy coding was arbitrary. The effect sizes were interpreted according to Cohen<sup>19</sup>: effect size of 0.2 indicated small effect, 0.5 indicated medium effect, and an effect size of 0.8 indicated a large effect size.

In the case of a significant variable in the multiple regression analysis, the main effects and interactions were further probed using analyses of covariance. We reported the means, standard errors (SE),  $P$ -values,  $F$  ratios, degrees of freedom, and effect sizes (partial  $\eta^2$ ). A partial  $\eta^2$  of 0.01 is considered a small effect size, 0.06 a medium effect, and 0.14 a large effect.<sup>20</sup> All pair-wise posthoc comparisons were run with Tukey correction. All the analyses were conducted in Jamovi statistical analysis software (2020), and the significance level was set at an alpha level of 0.05.

## RESULTS

### Descriptive Statistics

The original sample size of this survey was 1847, of whom 401 did not complete the home and family work roles questions and were case-wise deleted. Our sample includes 1115 (77%) women, 292 (20%) men, 23 (2%) non-binary, and 10 (1%) agender or other. The participants had a mean age of 30.5 years, a standard deviation of 13.3 years, and ranged from 18 to 79 years old.

Regarding the ethnicity of the participants, the majority were white ( $n = 1089$ ). The remaining participants identified themselves with Chinese ( $n = 181$ ), South Asian (eg, East Indian, Pakistani,  $n = 154$ ), West Asian (eg, Iranian, Afghan,  $n = 66$ ), Black ( $n = 63$ ), Latin, Central, and South American ( $n = 60$ ), Arab ( $n = 45$ ), South-east Asian (eg, Vietnamese, Cambodian,  $n = 35$ ), North American Aboriginal ( $n = 34$ ), Pacific Islands (eg, Fijian, Hawaiian,  $n = 6$ ), and Other ( $n = 58$ ) ethnicities.

Pre-COVID-19 home and family work roles average score had a mean of 4.87 and a standard deviation of 2.67. The average score witnessed a slight increase post-COVID-19, and the mean was 5.12 and a standard deviation of 2.57. We did not explore the change in each individual item of the Home and Family Work Roles Questionnaire and only evaluated the average score across all the items.

As for their current employment status, 611 (42%) were students, 504 (35%) were paid employees, 85 (6%) selected other, 60 (4%) were stay-at-home parents/caregivers, 56 (4%) were self-employed, 54 (4%) were laid-off, 49 (3%) were retired, and 26 (2%) were unable to work due to disability.

Regarding the status of the paid job pre-COVID-19, 505 (35%) had full-time jobs, 491 (34%) were unemployed, 379 (26%) had part-time jobs, and 71 (5%) selected other. Not surprisingly, after COVID-19 lockdowns, the unemployment rates surged and ranked first among the different categories, with a frequency of 40% ( $n = 561$ ). The numbers for full-time paid job status post-COVID-19 remained almost the same ( $n = 497$ , 35%). The number of respondents with part-time paid job status decreased by 9% after COVID-19 and declined to 247 (17%, compared with 26% pre-COVID-19). Lastly, participants who selected “other” increased by 4% post-COVID-19 and reached to 8% of the respondents. The reasons for other responses were not examined in this article. Figure 1 demonstrates and contrasts the frequencies of the pre- and post-COVID-19 paid job status.

About the question on “working from home,” 743 participants responded, and 704 participants did not. Out of those 743 participants, 332 (45%) mentioned they still go into their workplace, 206 (28%) participants indicated work from home with a similar workload, 104 (14%) of respondents mentioned work from home with a greater workload, 54 (7%) work from home with a lighter workload, 31 (4%) have always worked from home; lastly, 16 (2%) respondents mentioned they lost their jobs as is displayed in Fig. 2.

### Home and Family Work Roles Post-COVID-19 Prediction

Multiple regression analysis was run to predict home and family work roles post-COVID-19 based on pre-, and post-COVID-19 paid job status, current employment status, and pre-COVID-19 home and family work roles. There was linearity as

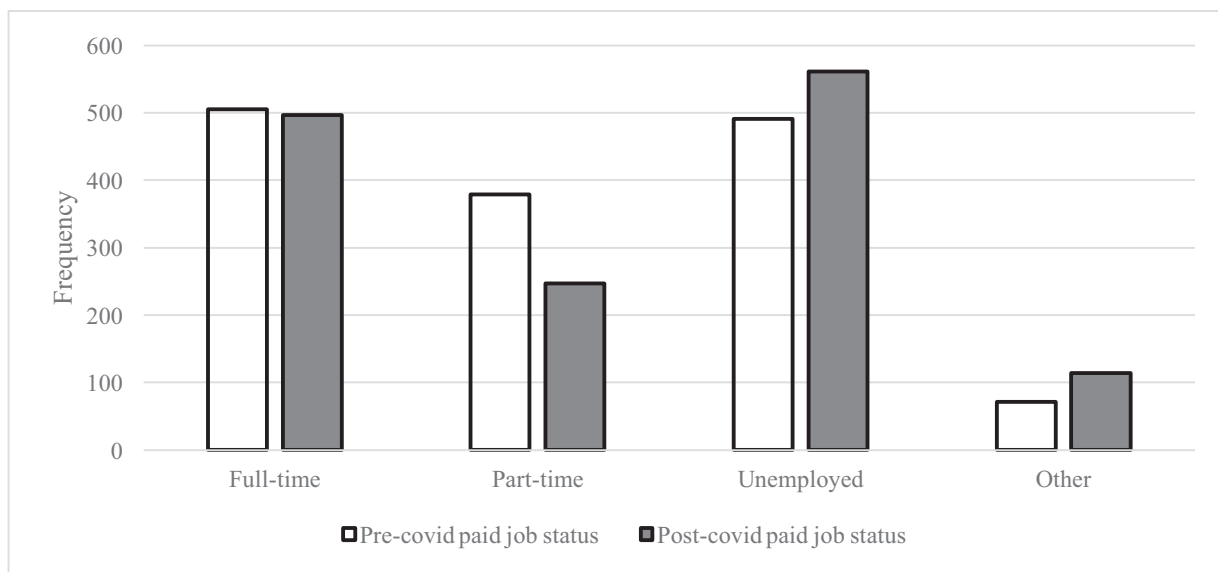


FIGURE 1. Paid job status pre- and post-COVID-19.

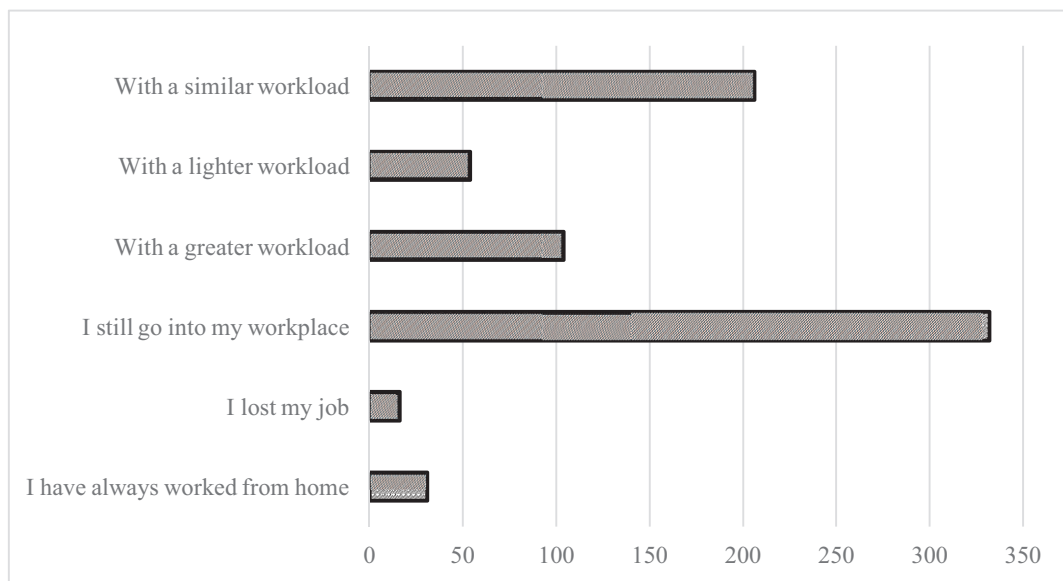


FIGURE 2. Working from home distribution.

assessed by partial regression plots and a plot of studentized residuals against the predicted values. Residuals were independent, as assessed by a Durbin–Watson statistic of 1.94. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as evaluated by tolerance values greater than 0.1. There were no studentized deleted residuals greater than  $\pm 3$  standard deviations, no leverage values greater than 0.2, and values for Cook’s distance above 1. The assumption of normality was met, as assessed by a Q–Q plot and a histogram.

The multiple regression model predicted (with statistical significance) post-COVID-19 home and family work roles,  $F(14, 1401) = 240.06, P < .001, \text{adj. } R^2 = .70$ . Amongst the assessed predictors, two variables added statistically significantly to the prediction. These significant predictors were pre-COVID-19 home and family work roles ( $F[1, 1401] = 2509.26, P < 0.001$ ), and pre-COVID-19 paid job status ( $F[3, 1401] = 5.66, P < 0.001$ ). Regression coefficients and standard errors can be found in Table 1 for all significant and non-significant independent variables. The  $\text{adj. } R^2$  of 0.70 indicates a large effect size of the overall model, according to Cohen.<sup>19</sup>

TABLE 1. Model Coefficients—Post-COVID-19 Home and Family Roles

Predictor	Estimate	SE	95% Confidence Interval		t	P	Stand. Estimate	95% Confidence Interval	
			Lower	Upper				Lower	Upper
Intercept <sup>a</sup>	0.87	0.23	0.41	1.32	3.76	<0.001			
Current employment status:									
Laid off—paid employee	-0.01	0.23	-0.46	0.43	-0.06	0.955	-0.00	-0.18	0.17
Other—paid employee	-0.30	0.18	-0.66	0.06	-1.63	0.103	-0.12	-0.26	0.02
Retired—paid employee	0.17	0.24	-0.30	0.65	0.71	0.477	0.07	-0.12	0.25
Self-employed—paid employee	0.12	0.20	-0.27	0.51	0.61	0.540	0.05	-0.10	0.20
Stay-at-home parent/caretaker—paid employee	0.21	0.23	-0.25	0.66	0.90	0.371	0.08	-0.10	0.26
Student—paid employee	0.03	0.12	-0.20	0.27	0.29	0.774	0.01	-0.08	0.11
Unable to work due to a disability—paid employee	-0.22	0.31	-0.82	0.38	-0.72	0.470	-0.09	-0.32	0.15
Pre-COVID-19 paid job status:									
Unemployed—other	0.43	0.19	0.05	0.80	2.21	0.027*	0.17	0.02	0.31
Full-time—other	0.76	0.20	0.38	1.14	3.88	<0.001*	0.30	0.15	0.44
Part-time—other	0.55	0.19	0.17	0.93	2.85	0.004*	0.21	0.07	0.36
Post-COVID-19 paid job status:									
Unemployed—other	-0.07	0.16	-0.38	0.23	-0.47	0.636	-0.03	-0.15	0.09
Full-time—other	-0.23	0.16	-0.54	0.09	-1.39	0.164	-0.09	-0.21	0.04
Part-time—other	-0.29	0.17	-0.62	0.04	-1.71	0.087	-0.11	-0.24	0.02
Pre-COVID-19 home and family roles	0.79	0.02	0.76	0.82	50.09	<0.001*	0.82	0.79	0.86

SE, standard error.  
<sup>a</sup>Represents reference level.  
<sup>\*</sup>Notes significant comparisons.

The most significant predictor in our regression model was the pre-COVID-19 home and family work roles, such that greater pre-COVID-19 home and family work roles were positively associated with an increased post-COVID-19 home and family work roles (Estimate: 0.79, SE: 0.02,  $P < 0.001$ , 95% CI 0.76 to 0.82). This association was accompanied by a large effect size of 0.82 (95% CI 0.79 to 0.86).<sup>19</sup>

Regarding the pre-COVID paid job status, the significant factors were: (1) those who were employed “full-time” performed a greater mean proportion of home and family work roles post-COVID-19 compared with those who selected “other” as their employment status (Estimate: 0.76, SE: 0.20,  $P < 0.001$ , 95% CI 0.38 to 1.14, medium effect size of 0.30); (2) being “part-time” employed was associated with larger home and family work roles post-COVID-19 compared with being “other” employed (Estimate: 0.55, SE: 0.19,  $P = 0.004$ , 95% CI 0.17 to 0.93, medium effect size of 0.21); (3) being “unemployed” was associated with larger post-COVID-19 home and family work roles, compared with being “other” employed (Estimate: 0.43, SE: 0.19,  $P = 0.027$ , 95% CI 0.05 to 0.80, a small effect size of 0.17).

### One-way ANCOVA Results

A one-way ANCOVA was run to determine the effect of pre-COVID-19 paid job status (full-time, part-time, unemployed, other) on post-COVID-19 home and family work roles after controlling for pre-COVID-19 home and family work roles. After adjustment for pre-COVID-19 home and family work roles, we found a statistically significant difference in post-COVID-19 home and family work roles between pre-COVID-19 paid job status categories,  $F(3, 1441) = 4.85$ ,  $P = 0.002$ , partial  $\eta^2 = 0.01$  (small effect size).

Post-hoc analysis was performed with a Tukey adjustment that revealed two significant pair-wise comparisons. Post-COVID-19 home and family work roles was significantly larger in (1) the participants who had full-time job versus other (mean difference of 0.63, 95% CI 0.20 to 0.70,  $P_{\text{tukey}} = 0.002$ ); (2) the participants who had part-time job versus other (mean difference of 0.47, 95% CI 0.08 to 0.59,  $P_{\text{tukey}} = 0.049$ ). The remaining pair-wise comparisons were non-significant and are reported in detail in Table 2. Controlling for the pre-COVID-19 home and family work roles, Fig. 3 demonstrates the marginal means of the post-COVID home and family work roles, for each level of the pre-COVID-19 paid job status.

### DISCUSSION

Our study found two factors that explained post-COVID-19 home and family work roles: pre-COVID-19 home and family work roles and pre-COVID-19 paid job status. There was a positive association of pre-COVID-19 home and family work roles and those who worked “full-time” or “part-time” before the lockdown

with post-COVID-19 home and family work roles. This demonstrated that those who contributed more to home responsibilities and worked full-time or part-time before COVID-19 contributed a larger percentage to post-COVID-19 home and family responsibilities. This research also identified that current employment status and post-COVID-19 paid job status did not predict post-COVID-19 home and family work roles.

These findings indicated that most respondents tend to contribute to the same proportion of home and family work after COVID-19 unfolded and lockdowns started, regardless of the changes in their employment status. This reinforces previous (or similar) research that demonstrates that even though some people are working from home or have lost their jobs, the fundamental structures of family responsibilities have remained unchanged.<sup>14,21</sup> It is important to recognize that the questionnaire measured the proportion of family and home tasks that were being done by the respondent, not the total amount of work.

The total amount of work that would be required within a given home and family context would vary substantially depending on multiple factors such as the number and age of children, house size, health and care requirements, presence of other people in the home, residence type (apartment vs house), etc. For our study sample, many of these factors would not have changed during COVID-19, which might explain why pre-COVID-19 home and family work roles and pre-COVID-19 paid job status predict 70% of the variation in the post-COVID-19 home and family work roles.<sup>22</sup> However, the questionnaire could not quantify whether the amount of work done had changed since it asked about the percentage of work done. For example, if the workload increased during COVID-19 but the respondent still performs the same percentage of the work in their family, the survey would not have detected a change.

The takeaways from this study elaborate on the “work-family conflict” model, proposed decades ago by Greenhaus and Beutell.<sup>18</sup> They proposed that persons without the pressure to participate in the home and family work roles, would experience less work-life conflict. This cross-sectional study of the home and family work roles during the pandemic, provided a novel test of this claim, as our results indicate how changes in the “work” component of the work-family conflict equation are fundamental to produce/prevent the mentioned conflicts. Even though Greenhaus and Beutell’s focus was mainly on the “family” side of the work-family equation, the findings of the present study highlight the importance of broadening the conceptual terrain of how changes in the work sphere might affect the family side of the work-family equation.

This was a cross-sectional study of the respondents’ perspectives on their home and family work roles during the pandemic, and how their job status was changed as the result of the pandemic. Although a common shortcoming with cross-sectional studies is that they do not capture data over time,<sup>23,24</sup> we asked the respondents to

**TABLE 2.** Post Hoc Comparisons—Pre-COVID-19 Paid Job Status

Comparison Groups		95% Confidence Interval							
Reference Group	Comparison Group	Mean Difference	SE	df	t	$P_{\text{tukey}}$	Cohen d	Lower	Upper
Unemployed	– Other	0.42	0.18	1441.00	2.36	0.085	0.30	0.05	0.55
	– Full-time	–0.21	0.09	1441.00	–2.21	0.122	–0.15	–0.28	–0.02
	– Part-time	–0.05	0.10	1441.00	–0.49	0.962	–0.03	–0.17	0.10
Other	– Full-time	–0.63	0.18	1441.00	–3.55	0.002*	–0.45	–0.70	–0.20
	– Part-time	–0.47	0.18	1441.00	–2.58	0.049*	–0.34	–0.59	–0.08
Full-time	– Part-time	0.16	0.10	1441.00	1.61	0.376	0.11	–0.03	0.25

Note. Comparisons are based on estimated marginal means. df, degrees of freedom; SE, standard error.

\*Notes significant comparisons.

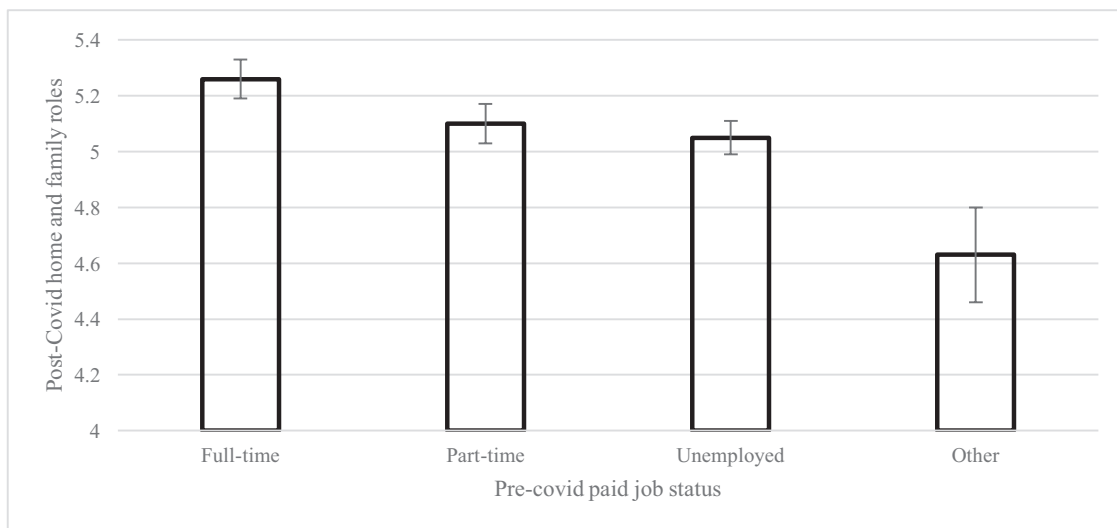


FIGURE 3. Marginal means plot of pre-COVID paid job status.

answer with their best estimates of their pre- and post-COVID-19 home and family work roles. This study addressed change over time by collecting retrospective and current data, with potential for recall bias. The recall bias was considered negligible for several reasons. Firstly, the time interval was relatively short and occurred during the active pandemic phase of June to August 2020 (3 to 5 months after WHO declared the pandemic and most restrictions were imposed). Secondly, the type of information collected retrospectively was very concrete and easily verifiable, unlike some studies that collect data on symptoms or opinions which can be transient, are not verifiable and subject to recalibration bias. The time frame of this study provided the participants with ample time within their daily routines of family and home responsibilities to adapt to the lockdowns, but not long enough for them to forget about their pre-COVID-19 habits.

The results of this study can inform the decision-making strategies of public health policy experts. Physical distancing and stay-at-home policies are essential for the physical well-being of the public; however, important questions arise regarding culture, family, caregiving for vulnerable individuals within the household/community, quality of life, etc.<sup>25,26</sup> By adopting the best available evidence produced by rigorous scientific procedures, such as those published in this article, policymakers can make informed decisions.<sup>5</sup> It is important to learn lessons and apply the learnings to make more effective public health strategies.<sup>27</sup> Future research are warranted to monitor and report the ongoing process of family work roles adaptations and forming the “new normal” relationships. With the rapid changes in the global trend of COVID-19 pandemic and the public policies regarding lockdowns, future research should evaluate and capture new findings in this regard.

### Strengths and Limitations

The large sample size of this survey and the variation in basic demographics such as age, gender, etc, suggests that this might be generalizable to a large population and have great external validity. To our knowledge, this study was one of the first of its kind to have had such a broad range of participants.

The survey was conducted online with recruitment through social media and word-of-mouth; thus, it was not possible to control or limit the group of respondents. The limitation of this survey was that participation was mostly comprised of women and students. This might be caused by recruitment techniques through social

media and university and may not represent individuals in later career stages.

### CONCLUSION

Respondents had higher home and family work roles post-COVID-19. Unemployment statistics were higher post-pandemic compared with pre-pandemic conditions. Greater home and family role responsibilities, as well as full-time and part-time employment pre-COVID-19 were associated with greater post-COVID-19 home and family role responsibilities. Other work-related changes did not add significantly to the prediction model.

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