



WAVE 3

National Income Dynamics
Study (NIDS) – Coronavirus
Rapid Mobile Survey (CRAM)

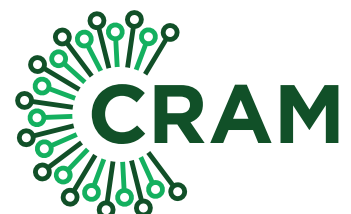
Childcare and depression during the coronavirus pandemic in South Africa: A gendered analysis

Chijioke O. Nwosu - Human Science Research Council, South Africa

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N.i.D.S.
NATIONAL INCOME DYNAMICS STUDY



CORONAVIRUS RAPID MOBILE SURVEY 2020

Childcare and depression during the coronavirus pandemic in South Africa: A gendered analysis

Chijioke O. Nwosu¹

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic has devastated livelihoods and health systems globally. The pandemic resulted in the closure of businesses and schools and the remote provision of many services in order to mitigate the spread of the virus. In some instances, families stopped patronizing paid caregivers due to the fear of contracting the virus and financial concerns due to massive job losses. Even with the re-opening of schools, many families are reluctant to send their children back to school on an in-person basis. One key consequence of these disruptions is a significant increase in the need for childcare services, including assistance with schoolwork. Such a substantial increase in time requirements for childcare domestically has potential mental health consequences. We therefore ascertained the relationship between childcare and mental health in South Africa. Data came from the second and third waves of the National Income Dynamics Study-Coronavirus Rapid Mobile survey. The outcome was a depression index obtained from the two-item Patient Health Questionnaire while the main covariate was the average number of hours spent in taking care of children per weekday. Employing the ordered logit model, we found a positive relationship between spending more hours on childcare and worse mental health for caregivers, with the relationship generally stronger for men. We suspect that our results are lower bound estimates of the impact of time spent on childcare on mental health in South Africa. Furthermore, the childcare-mental health relationship was significantly mediated by childcare responsibilities preventing/mitigating the ability of caregivers to work as well as preventing caregivers from searching for jobs. These findings highlight the wider health implications of COVID-19 and the need to carefully consider potential policy responses aimed at containing the virus. We advocate a multi-stakeholder approach to mitigating the mental health impact of COVID-19 by encouraging conversations and input from government, school authorities, employers and parents/guardians.

Keywords: COVID-19; Mental health; Childcare; Parents and guardians; South Africa

¹ The Impact Centre, Human Sciences Research Council, Cape Town. cnwosu@hsrc.ac.za

Executive summary

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has devastated economies and livelihoods, placing a huge strain on health systems globally with dire consequences for human health and welfare in general. While much of the attention has rightly focused on preventing and managing infections as well as containing the economic consequences of the pandemic, scholars have begun to highlight the substantial mental health challenges associated with the pandemic. A focus on the mental health consequences of COVID-19 is not unexpected for a number of reasons. One, fear and anxiety about becoming infected as well as the endless news cycles reinforcing the gloomy reality surrounding the virus can adversely affect mental health outcomes (Stainback, Hearne, & Trieu, 2020). Second, some of the measures taken as part of the pandemic response, like lockdowns, have potentially serious short- and long-term mental health implications (Galea, Merchant, & Lurie, 2020). Moreover, the massive loss of jobs caused by the pandemic has been found to be associated with poorer mental health outcomes (Kawohl & Nordt, 2020; Xiong et al., 2020). Furthermore, some measures taken against the pandemic, like school closures and remote/asynchronous learning, resulted in secondary consequences like significantly increased time requirements for childcare by parents and guardians, which can potentially have adverse mental health consequences for caregivers. The increase in time requirement for taking care of children as well as feelings of helplessness partly due to lack of specialized skills for adequately assisting children given a multiplicity of needs, has potentially serious mental health implications.

Consequently, this study ascertained the relationship between the amount of time spent taking care of children and the mental health of caregivers. We disaggregated the analysis by gender given a historical cultural disposition that disfavors women and gender disparities regarding time spent on childcare and other housework (Giuliano, 2020). We estimated cross-sectional models using the second and third waves of the National Income Dynamics Study (NIDS)-Coronavirus Rapid Mobile (CRAM) survey conducted in July – August and November – December 2020 respectively (NIDS-CRAM, 2020b, 2020c). Wave 2 and wave 3 of the NIDS-CRAM survey therefore coincided with level 3 and level 1 lockdown restrictions respectively in South Africa. The NIDS-CRAM survey was based on the fifth wave of the NIDS survey conducted in 2017, with the NIDS-CRAM survey designed to capture various aspects of the impact of the COVID-19 pandemic in South Africa (Kerr, Ardington, & Burger, 2020). The outcome was a depression index captured by a linear index of the two-item Patient Health Questionnaire (PHQ-2), with higher values indicating worse mental health. Childcare was captured by the self-reported average number of hours each respondent spent taking care of children per weekday.

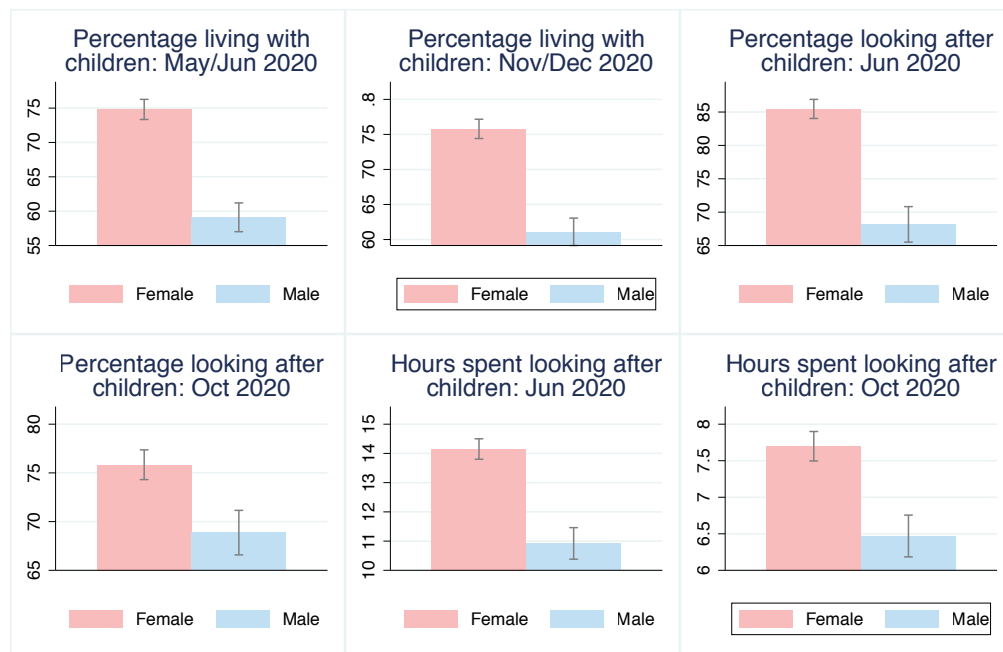
Key findings

The results indicate significant gendered differences in childcare responsibilities during both level 3 and level 1 lockdown restrictions (see *Figure E1* below).

The proportion of women and men who lived in households that had children remained fairly constant between level 3 and level 1 restrictions, with 75% (76%) of women and 59% (61%) of men living in such households during level 3 (level 1) restrictions. However, among these women and men living with children, the proportion of women engaged in childcare reduced substantially compared to men. While this proportion declined from 85.5% to 75.8% (a ten-percentage point drop) with the decline

statistically significant between level 3 and level 1 for women, it remained almost stagnant at 68.2% and 68.9% respectively during both periods for men. Not only did women record a relatively sharp decline in the proportion looking after children than men, women who looked after children also recorded a larger drop in their time commitment to those children than men over time. As also shown in *Figure E1*, the average number of hours devoted to childcare per weekday by women who looked after children declined by 45.8% (from 14.2 hours to 7.7 hours) while it declined by 40.4% for men (from 10.9 hours to 6.5 hours). That said, we see that women still spent significantly more time on childcare than men even during level 1 lockdown restrictions.

Figure E1: Gendered differences in co-residence with children and childcare



Note:

- (1) All estimates weighted by panel weights
- (2) Percentage looking after children conditional on living with children
- (3) Hours spent looking after children per weekday conditional on spending time on childcare
- (4) June coincides with level 3 lockdown restrictions
- (5) October-December coincide with level 1 lockdown restrictions

The above figures should be understood within a context of significant financial hardship, socioeconomic disruption and substantial need for childcare occasioned by the pandemic. COVID-19 resulted in substantial job losses while some of the control measures like school closures, as well as fear about the virus conspired to place significant childcare burden on parents and guardians. Even as at October 2020 (when the country was on the least restrictive level 1 lockdown restrictions), this study showed that 74% of adults who resided with children less than 7 years old indicated that neither them nor anybody in their household could afford Early Childhood Development (ECD) centre fees. For those who paid for ECD services in February (before the pandemic control measures were enacted), almost half (49%) could no longer afford such services in October 2020. Moreover, while 70% of adults who resided with under-7 children in November – December 2020 indicated that children in their households did not attend ECD centres in the last seven days, COVID and financial reasons accounted for at least 53% of the main reason for non-attendance. Some of the most common reasons for non-attendance were, “Child may get COVID-19 at ECD centre” (14%), “ECD centre is temporarily closed due to lockdown” (18%) and “I cannot afford the fees” (15%). Furthermore, available data indicates that in almost all these cases, it was an adult in the household who took care of these children, with less than 2% of respondents indicating that they utilized the services of a domestic worker.

Moreover, we observed a significant 6 percentage point decline in the proportion of the population

who felt at risk of contracting COVID-19 and a significant 10 percentage point increase in those who felt not at risk of contracting the virus. This is worrying especially in the context of the country entering a second wave of the pandemic.

We present results of the relationship between time spent on childcare and mental health below (see *Table E1*). The results indicate a positive and statistically significant association between the number of hours spent on childcare and poorer mental health during both level 3 and level 1 lockdown restrictions. We also note that as expected, household hunger was positively associated with worsening mental health, while non-Africans (especially coloureds and whites) had significantly worse mental health outcomes relative to Africans.

Table E1: Relationship between mental health and childcare (ordered logit)

	(1)	(2)	(3)	(4)	(5)	(6)
	Wave 2 (level 3)			Wave 3 (level 1)		
	Female	Male	All	Female	Male	All
Childcare hours per weekday	0.018**	0.024**	0.019***	0.013	0.034*	0.023**
	(0.007)	(0.011)	(0.006)	(0.011)	(0.017)	(0.009)
Number of observations	2,600	1,522	4,122	2,711	1,620	4,331

Note: Outcome is PHQ-2 depression scores; All statistics account for survey design and non-random attrition; *, **, *** indicate statistical significance at 10%, 5% and 1% levels of significance respectively; Standard errors in parentheses; Controls: location, marital status, employment status, income changes, household hunger, dwelling type, perception of own risk of COVID-19, education, age, race, gender, grant receipt and number of children in the household

To ascertain whether the positive association between childcare and worsening mental health was mediated by childcare-induced labour market outcomes, we interacted childcare hours with each of a triad of questions on whether childcare adversely affected labour market outcomes. These were: whether looking after children stopped them from going to work or made work difficult; whether looking after children prevented them from working the same number of hours as they used to; and whether looking after children prevented them from searching for work. The results indicate that the positive relationship between hours devoted to childcare and poorer mental health was significantly mediated by childcare preventing male caregivers from working or making work difficult for them. Childcare preventing job search seemed to also be a mediating factor even though it was only statistically significant in the general population.

Implications for policy

This study is important for understanding the health consequences of COVID-19, particularly the secondary consequences of policies and regulations aimed at controlling the pandemic in South Africa. While most of the attention has focused on the need to contain the virus and minimize infections, prepare the health system to adequately take care of the infected and cushion the economic impact of the pandemic, this study posits that the policy response to the pandemic must also prioritize the mental health of parents and caregivers. Moreover, with the emergence of a second wave of the pandemic in South Africa, it is imperative to consider the wellbeing of families, especially those with children, in the response. It is incontrovertible that COVID-19 has placed additional burden of childcare on parents and guardians of children, with many of them unwilling to use or unable to afford ECD services. In this vein, it must be recognized that parents and guardians with young children (especially those requiring supervision) face elevated mental health challenges linked to taking proper care of their children during the pandemic. Furthermore, labour market concerns like childcare leading to people quitting their jobs as well as preventing those currently out of the labour force from searching for jobs place significant mental health burdens on

parents and caregivers. Perhaps, measures like encouraging employers to implement flexible work schedules, encouraging greater communication between parents and school authorities in the event of further school closures and remote learning, as well as job search assistance for parents may be helpful in ameliorating the mental health effects of childcare responsibilities during the pandemic. In conclusion, we call for a healthy balance between pandemic control efforts and the mental health of parents and caregivers who will bear the brunt of some of these public health measures. Where possible, appropriate support must be provided to ease the burden of an already traumatized population.

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has had a devastating impact on economies and livelihoods globally with dire consequences for human welfare. While a lot of attention has rightly focused on the dangers of infection as well as the economic consequences of the pandemic due to the associated job losses and disruption in supply chains, etc., scholars have begun to highlight the nontrivial mental health issues associated with the pandemic. A focus on the mental health consequences of the pandemic is not unexpected for a number of reasons. One, the fear of becoming infected as well as the endless news cycles highlighting the gloomy reality surrounding the virus can worsen mental health (Stainback et al., 2020). Second, some of the important measures taken to combat the spread of the pandemic, like lockdowns, have potentially serious short- and long-term mental health implications (Galea et al., 2020). Moreover, the massive loss of jobs occasioned by the pandemic resulted in a worsening of mental health outcomes (Kawohl & Nordt, 2020; Xiong et al., 2020). Furthermore, some direct measures taken against the pandemic, like school closures, resulted in secondary consequences like significantly increased time requirements for childcare by parents and guardians, which can potentially have adverse mental health consequences.

South Africa implemented one of the most stringent response measures against the COVID-19 pandemic in Africa and globally (Carlitz & Makhura, 2020). This chiefly consisted in the declaration of a national state of disaster on 15 March 2020 and the implementation of a tiered series of nationwide lockdowns beginning with level 5 – the highest and strictest level – on March 26 (Dlamini-Zuma, 2020). Level 5 lockdown, which lasted until April 30, 2020, proscribed every form of non-essential travel and gathering including for work, with people confined to their homes. The restrictions were lowered to level four which entailed restrictions on most non-essential travel and gatherings between May 1 and May 31, 2020. Further lowering of the restrictions to levels 3, 2 and 1 (with level 1 being the least restrictive, allowing virtually every aspect of economic and social life to resume) were implemented during the periods, June 1 – August 17 2020, August 18 – September 20 2020, and September 21 – December 28 2020. Following a spike in cases not only in the country but globally, the government placed the country on an adjusted level 3 lockdown from December 29 2020 in order to contain infections (South African Government, 2020).

One direct consequence of the lockdowns is substantial job losses. One estimate indicates that about three million jobs were lost between February and April 2020 (Spaull & The NIDS-CRAM Team, 2020a). Unfortunately, most of these jobs had yet to return as at June 2020, implying prolonged agony for the affected workers and their families, with the lowest employment levels and the slowest recoveries experienced by disadvantaged groups like women and historically marginalized racial groups (Spaull & The NIDS-CRAM Team, 2020b). Moreover, a significant number of those who remained on their jobs experienced reduced incomes, a phenomenon that is not unique to South Africa but has been documented elsewhere (Coibion, Gorodnichenko, & Weber, 2020; Statistics South Africa, 2020). Data from the third wave of the National Income Dynamics Study (NIDS)-Coronavirus Rapid Mobile (CRAM) survey (the dataset used for the analysis in this paper) indicate that even as at October 2020 (when the country was on the least restrictive level 1 lockdown), 74% of adults who resided with children less than 7 years old indicated that neither them nor anybody in their household could afford Early Childhood Development (ECD) centre fees. For those who paid for ECD services in February (before the pandemic control measures were enacted), almost half (49%) could no longer afford such services in October 2020.

School closures were an important part of the South African government's response to COVID-19. Indeed, this phenomenon was largely a global reaction to the virus. As noted by Ewing and Vu (2020), the pandemic was responsible for the suspension of schools in 189 countries as at April 2020, severely disrupting academic calendars and placing a huge childcare strain on parents and guardians. In South Africa, even among the schools where some form of teaching and learning continued, such could only be conducted remotely via online mediums. Moreover, especially in the early days of the pandemic, the strict lockdown regulations meant that many daytime childminders discontinued work given that such work was not classified as essential. Anecdotal evidence also indicates that even before the strict lockdown regulations were enacted, some households asked for the temporary discontinuation of the services of their daytime childminders for fear of infecting their households. An obvious consequence of these school-related measures (outright school closures and remote learning), the disruption of the work of (especially daytime) childminders, and job losses and reduction in hours supplied (resulting in severe household budget constraints) was a significant increase in the amount of time devoted by parents and guardians to childcare. As shown in wave 3 of the NIDS-CRAM survey conducted in November – December 2020, 70% of individuals who resided with under-7 children indicated that children in their households did not attend ECD centres in the last seven days. For these children who did not attend ECD, COVID and financial reasons accounted for at least 53% of the main reason for non-attendance, with some of the most common reasons being, "Child may get COVID-19 at ECD centre" (14%), "ECD centre is temporarily closed due to lockdown" (18%) and "I cannot afford the fees" (15%). It is therefore, not unlikely in this context that parents/guardians would need to increase the time they spent on children, be it in the form of play time, assisting with schoolwork (more than in the time of in-person learning), etc. Indeed, when asked who took care of the children who did not attend ECD centres, about 92% indicated that the responsibility fell on either them or another adult in the household, with only 1.6% indicating that a domestic worker, nanny or childminder looked after such children.

Prior research indicates that the extra burden of childcare disproportionately affected women in South Africa. According to Casale and Shepherd (2020) – who used the first two waves of the NIDS-CRAM survey, this gendered burden of childcare was the result of women being more likely than men to live with children, while even among women and men living with children, the former reported spending more additional time on childcare especially during the early days of the lockdown than the latter. Even with the phased re-opening of schools due to the relaxation of lockdown restrictions and the subsequent reduction in childcare hours for both men and women, men experienced a sharper reduction in childcare responsibilities than women between April and June 2020. Among women and men living with children, the gender gap in childcare rose from 2.9 hours per day in April 2020 to 3.3 hours per day in June 2020 to the disadvantage of women (Casale & Shepherd, 2020). Furthermore, the same study reported a significant gendered labour market impact of such extra childcare with more than twice the number of women as men reporting that childcare prevented them from working or made working difficult in June 2020.

Obviously, such added responsibility has the potential to exert a substantial mental health toll on parents/guardians. Such mental health impacts are not only unique to South Africa but have been recorded globally. For instance in Poland, a survey of parents on the home education of their children showed that a significant number of them felt that home schooling was beyond their capabilities and were not confident in their ability to effectively home-school their children, with many expressing anxiety about their children's future (Parczewska, 2020).

Zhao et al. (2020) evaluated the effects of home schooling due to COVID-19 on school children, parents and teachers in China (all school age children in China were home-schooled via live/recorded lessons, online group communication and software-based homework submission beginning in the 2020 spring semester). While 76% of the respondents thought that the home-schooling style was acceptable, the study found that 17.6% of the students were suspected to have emotional or behavioural problems, while parents and teachers showed higher-than-usual levels of anxiety.

In the UK, Chandola, Kumari, Booker, and Benzeval (2020) reported a 30% increase in the prevalence of common mental disorders (CMD) between 2017/19 and April 2020, with the incidence of CMD

dropping to below 13% from April to May 2020. They found that some of the increase in CMD between April and May could be ascribed to increased childcare and home-schooling demands.

There is a rich literature on the relationship between childcare in particular and housework/home production in general on the one hand, and subjective wellbeing on the other. This was mostly spurred by the seminal work of Friedan (1964) which made a compelling case that the lack of identity and self-determination of women beyond being seen as wives and mothers contributed to the widespread unhappiness and dissatisfaction of American women. This, coupled with studies which explicitly recognized home production as a form of work (not least Becker (1965, 1993)) gave rise to studies which examined the impact of housework on wellbeing (Bird & Ross, 1993; Glass & Fujimoto, 1994; Goodman, Geiger, & Wolf, 2017; Treas, van der Lippe, & Tai, 2011; C. N. Weaver & Holmes, 1975). While there seems to be no consensus on the welfare impact of home production, the massive entry of women into the labour force and its consequences on the traditional view of household division of labour between men and women have propelled the welfare implications of housework, especially among women, to the front burner of welfare analysis .

While we are not aware of studies that have analysed the relationship between childcare and mental health during the COVID-19 pandemic in South Africa, some studies have found a significant rise in the prevalence of mental health conditions during the pandemic relative to the pre-pandemic era. For instance, using the NIDS and NIDS-CRAM surveys, Oyenubi and Kollamparambil (2020) found that the prevalence of depressive symptoms in South Africa doubled between 2017 and June 2020 (from 12% to 24%). They also found that the largest increases in the prevalence of depressive symptoms occurred among men, non-black Africans, those with tertiary education and the wealthiest 20% of the income distribution. Some of the key determinants of higher depressive symptoms were employment status and risk perception of contracting COVID-19. Indeed, this nontrivial increase in the prevalence of poor mental health during the pandemic is not surprising given the above health and financial stressors associated with the pandemic.

Given the foregoing, this study ascertained the relationship between childcare responsibilities and mental health during the COVID-19 pandemic in South Africa. We hypothesized that spending more time on childcare responsibilities was associated with poorer mental health outcomes. Given the aforementioned gendered aspect of childcare responsibilities, we conducted a gendered analysis to determine if the relationship was stronger among men or women. Furthermore, given the fact noted in the foregoing that such extra childcare responsibilities adversely affected participation in the labour market, we tested possible labour market avenues through which childcare might have been associated with mental health. Specifically, we tested whether it occurred through forcing caregivers to quit their jobs/made work difficult, reducing hours of work or preventing job seekers from searching for employment. Our results indicate that the labour market link operated through forcing people (especially men) to quit their jobs/made work difficult and preventing caregivers from searching for jobs.

This study is significant in a number of ways. First, it provides further evidence of the health impact of COVID-19. This is important given that much of the debate around the closure of schools has focused on its effect on children's educational attainment and exposure to the virus. While these are hugely important, it is equally important to consider the wider mental health consequences of school closures which may have both short- and long-term consequences on the welfare of parents/guardians. Moreover, it further throws light on the pandemic-mental health-labour market nexus which is very important when thinking through important policies like school closures. Finally, this paper is an important resource as the world in general and South Africa in particular enter a second wave of the pandemic. It is important to find a healthy balance between pandemic control and the mental health of parents and caregivers who will bear the brunt of some of these public health measures. Where possible, appropriate support must be provided to ease the burden of an already traumatized population.

Methods

Data and key variables

Data came from the NIDS-CRAM survey. NIDS-CRAM is a rapid telephonic longitudinal survey of South Africans conducted in response to the COVID-19 pandemic. It was based on the fifth (i.e. last) adult wave of the NIDS survey, the first nationally representative longitudinal survey of South Africans .

The first wave of the NIDS-CRAM survey targeted about 17 000 individuals while the sampling methodology was stratified sampling with batch sampling. In this case, sampled individuals were sent to fieldwork teams in batches of 2 500 individuals randomly drawn from 99 strata defined by a combination of rural/urban dwelling, race, household per capita income decile and age. Using batch sampling allowed for flexibility given that it allowed for the adjustment of the sampling rate for each stratum with new information over the course of the survey (Kerr et al., 2020). The first wave of the NIDS-CRAM survey, which was conducted in May – June 2020, successfully interviewed 7 073 respondents. Currently, the NIDS-CRAM survey has three waves, with the second and third waves conducted in July – August and November – December 2020 respectively (Ingle, Brophy, & Daniels, 2020a, 2020b; NIDS-CRAM, 2020a).

This study was based on the second and third waves of the NIDS-CRAM panel given that the outcome variable, mental health, was only collected in those waves (NIDS-CRAM, 2020b, 2020c). Out of the 7 073 successfully completed interviews in wave 1, wave 2 recorded 5 676 successful interviews (80.2% success rate) while wave 3 recorded 5 046 successful interviews from the original wave 1 sample (representing 88.9% of successful interviews in wave 2 and 71.3% of the original successful interviews in wave 1) (Ingle et al., 2020a, 2020b).

The outcome variable is a measure of mental health derived from the two-item version of the Patient Health Questionnaire (PHQ-2) instrument. The following two questions were asked of respondents: “Over the last two weeks, have you had little interest or pleasure in doing things?”; and “Over the last two weeks, have you been feeling down, depressed or hopeless?”. Responses were as follows: Not at all (0), Several days (1), More than half the days (2), and Nearly every day (3). These responses were codified to yield an index ranging from 0 to 6, with higher values indicating poorer mental health in general. While some authors suggest that a cut-off of 2 or 3 indicates the presence of possible depressive symptoms (Kroenke, Spitzer, & Williams, 2003; Manea et al., 2016), we follow Zuvekas (2014) in using the linear PHQ-2 index given that it measures both probable clinical depression and depression severity.

The main covariate is the number of hours devoted to childcare on a typical weekday. The reference period for wave 2 (i.e. the July – August survey) was June 2020, which coincided with level 3 lockdown restrictions. For wave 3 (the November – December survey), the reference was October 2020, i.e. during level 1 lockdown restrictions. So, both variables have a similar time reference, i.e. the month before the commencement of the survey. Other covariates include gender, race, education, location, an indicator for whether income decreased over the past four weeks, household’s experience of hunger, the type of dwelling household lived in, respondents’ perception of their risk of COVID-19, marital status, age, household receipt of government grant(s), and the number of children in the household. After data cleaning, the estimation samples consisted of 4 122 (4 331) observations in wave 2 (wave 3) with complete information on all the included variables.

Analytical methods

Given the ordered nature of the outcome variable, we estimated ordered logit regressions of the PHQ-2 index on hours spent on childcare and a host of control variables (see *Table 2*). The following generic model captures the relationship:

$$y_i = X_i'\beta + \varepsilon_i$$

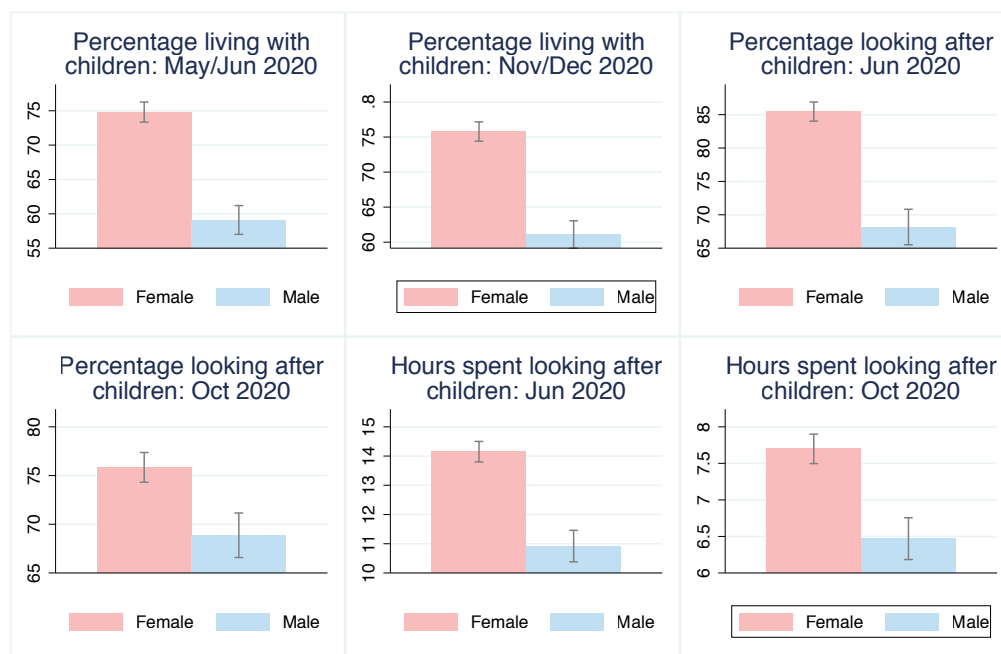
where y denotes the seven-category PHQ-2 depression score; i is an individual identifier; X is a vector of covariates; while ε denotes the idiosyncratic error term. We complement the results of these models with insights from descriptive analyses in order to better understand the behaviour of the outcome variable and key variables in the dataset.

Results

Descriptive statistics

We ascertained the gendered division of labour regarding childcare as captured in wave 2 and wave 3 of the NIDS-CRAM survey. These statistics are depicted in *Figure 1*.

Figure 1: Gendered differences in co-residence with children and childcare



Note:

- (1) All estimates weighted by panel weights
- (2) Percentage looking after children conditional on living with children
- (3) Hours spent looking after children per weekday conditional on spending time on childcare
- (4) June coincides with level 3 lockdown restrictions
- (5) October-December coincide with level 1 lockdown restrictions

The proportion of women and men who lived in households that had children (i.e. individuals aged 0 – 17 years) remained fairly constant between waves with 75% (76%) of women and 59% (61%) of men living in such households in wave 2 (wave 3). However, among these women and men living with children, the proportion of women engaged in childcare reduced substantially compared to men. While the proportion of women engaged in childcare declined from 85.5% to 75.8% (a

ten-percentage point drop) with the decline statistically significant between wave 2 and wave 3 ($p < 0.01$), the proportion of men remained almost stagnant at 68.2% and 68.9% in wave 2 and wave 3 respectively. Not only did women record a relatively sharp decline in the proportion looking after children than men, women who looked after children also recorded a larger drop in their time commitment to those children than men between both waves. As shown in *Figure 1*, the average number of hours devoted to childcare per weekday by women who looked after children declined by 45.8% (from 14.2 hours to 7.7 hours, $p < 0.01$) while it declined from 10.9 hours to 6.5 hours (a 40.4% decline, $p < 0.01$) for men. That said, we see that women still spent significantly more time on childcare than men in wave 3 ($p < 0.01$). It is important to note that all the within-wave gender differences reported in *Figure 1* were statistically significant given the non-overlap of the confidence intervals.

Table 1 presents the descriptive statistics indicating the gender-specific means and percentages in each wave as well as their differences. In addition, we present the temporal differences in the statistics.

Table 1 indicates that while there was no statistically significant difference in the PHQ-2 depression score between women and men in each wave, the scores significantly worsened over time. Expectedly, women spent significantly more time caring for children in each wave than men; however, the gender differences declined significantly between wave 2 and wave 3 (from 4.6 hours to 1.6 hours per weekday) – as expected, the average times spent on childcare are lower in *Table 2* than *Figure 1* since the latter were conditional on spending time on childcare. Also, as expected with the re-opening of schools, the progressive lowering of lockdown restrictions and more people working again (see the significant drop in the percentage who reported not employed between both waves), there was a statistically significant reduction in the number of hours devoted to childcare across both waves. Women lived in households with slightly (but significantly) more children than men. Men were significantly more likely to be married or cohabiting in each wave. Also, while men were more likely to live in households where the main source of income declined in wave 2, the converse obtained in wave 3. While there was no statistically significant gender difference in belonging to households affected by hunger in either wave, the proportion of the population belonging to hunger-affected households significantly increased between wave 2 and wave 3. Regarding perception of personal risk of contracting COVID-19, while there was no gendered differences in each wave, the results indicate that there was a significant increase in the proportion of those who felt that they were not at risk of contracting the virus between wave 2 and wave 3. However, there were significant declines in the proportions of those who were either not sure of their risk of contracting the virus, or felt they were at risk. Women were more likely than men to belong to households where someone was a recipient of any government grant (i.e. the Child Support Grant, the Old Age Pension grant or the Special COVID-19 Social Relief of Distress grant) in both waves. Moreover, the proportion of individuals belonging to households accessing these grants significantly increased over time.

Table 1: Descriptive statistics

Variable	Wave 2				Wave 3				
	Female	Male	Diff (Fem-Male)	All	Female	Male	Diff (Fem-Male)	All	W3-W2
PHQ-2 depression score	1.3	1.3	-0.0	1.3	1.5	1.6	-0.0	1.6	0.2***
Childcare hours per weekday	8.9	4.3	4.6***	6.8	4.6	3.0	1.6***	3.8	-2.9***
Years of schooling	11.4	11.5	-0.1	11.5	11.3	11.4	-0.1	11.4	-0.1
Age	40.4	39.8	0.6	40.2	41.3	40.2	1.1	40.8	0.6**
Number of co-resident children	1.9	1.3	0.6***	1.7	2.1	1.5	0.6***	1.8	0.2***
Lives in formal location	30.4%	33.4%	-3.0	31.7%	30.1%	31.1%	-1.0	30.6%	-1.2
Lives in informal location	39.4%	42.1%	-2.8	40.6%	40.1%	43.5%	-3.4	41.7%	1.1
Lives in traditional location	17.2%	15.3%	1.9	16.3%	19.4%	18.1%	1.3	18.8%	2.4***
Lives on a farm or smallholding	13.0%	9.2%	3.8***	11.3%	10.4%	7.3%	3.1***	8.9%	-2.3***
Married or cohabiting	45.5%	56.4%	-10.9***	50.5%	45.1%	56.2%	-11.2***	50.3%	-0.2
Not employed	60.7%	42.4%	18.4***	52.4%	54.8%	36.8%	17.9***	46.4%	-5.9***
Household experienced a decrease in main source of income in past 4 weeks	16.8%	22.5%	-5.7***	19.4%	40.9%	29.7%	11.1***	35.7%	16.3***
Someone in household experienced hunger in last 7 days due to lack of food	16.0%	14.5%	1.5	15.3%	17.9%	15.5%	2.4	16.8%	1.5*
Lives in a house/flat (otherwise, traditional/ informal/ other type of house)	77.4%	81.3%	-3.9**	79.2%	78.4%	81.1%	-2.7	79.6%	0.5
Self-perceived no risk of COVID-19	42.8%	40.8%	2.0	41.9%	51.7%	50.9%	0.8	51.3%	9.5***
Self-perceived uncertain risk of COVID-19	13.2%	15.0%	-1.8	14.0%	10.6%	10.0%	0.6	10.3%	-3.7***
Self-perceived at risk of COVID-19	44.0%	44.2%	-0.2	44.1%	37.7%	39.1%	-1.4	38.3%	-5.8***
African	77.6%	75.6%	2.0	76.7%	76.8%	77.1%	-0.3	76.9%	0.2
Coloured	8.8%	10.6%	-1.8	9.6%	11.1%	10.2%	0.9	10.7%	1.1
Asian/Indian	1.9%	3.7%	-1.8	2.7%	2.0%	3.0%	-1.1	2.5%	-0.2
White	11.7%	10.2%	1.6	11.0%	10.1%	9.7%	0.5	9.9%	-1.1
Household member(s) received grant	74.9%	54.3%	20.6***	65.5%	76.3%	61.8%	14.5***	69.5%	4.0***
Male (otherwise, female)				45.6%				46.6%	1.0
Number of observations	2 600	1 522		4 122	2 711	1 620		4 331	

Note: All statistics weighted by wave 2 and wave 3 panel weights: *, **, *** indicate statistical significance at 10%, 5% and 1% level of significance

We present the results of the wave-specific regression models in *Table 2*. The results indicate a positive and statistically significant association between the number of hours spent on childcare per weekday and the PHQ-2 depression index in all the specifications (except for the female specification in wave 3). Furthermore, the childcare-mental health relationship was stronger for men in both waves. As expected, household hunger was positively associated with worsening mental health while relative to Africans, coloureds and whites had worse mental health scores. Relative to individuals who felt that they were not at risk of contracting COVID-19, those who felt at risk of contracting the virus had worse mental health while the result was mixed across the waves for those who were uncertain about their risk (with the relationship positive and mostly statistically significant in wave 2 but generally insignificant and/or negative in wave 3). Also, the more educated had worse depression outcomes in wave 2 while the relationship virtually disappeared in wave 3. The statistical significance of the cut-offs indicate that the various categories should not be combined, thus lending support to our preferred ordered logit specification relative to a binary specification (Cameron & Trivedi, 2010).

To test if family structure – i.e. whether the children being taken care of were own children or other people’s children – affected the relationship between childcare and depression, we re-estimated the above models, restricting the sample to individuals co-resident with their children. The results were similar, only generally slightly higher in magnitude to those reported in *Table 2* (results are available on request).

To test whether the positive association between childcare and worsening mental health was mediated by childcare-induced labour market outcomes, we exploited a number of labour market outcomes. Respondents were asked a triad of questions in wave 2: whether looking after children stopped them from going to work or made work difficult; whether looking after children prevented them from working the same number of hours as they used to; and whether looking after children prevented them from searching for work. We therefore interacted childcare hours per weekday with each of these variables in wave 2 (unfortunately, these variables do not exist in wave 3). The results, shown in *Table 3*, indicate that the positive relationship between hours devoted to childcare and depression was at least mediated by childcare preventing male caregivers from working or making work difficult for them. Childcare preventing job search seemed to also be a mediating factor even though it was only statistically significant in the general population.

We also estimated panel data models of the above relationships (results are available on request). The broad conclusions from the results based on the signs of coefficients are in line with their cross-sectional counterparts reported here even if they were generally not as statistically significant as the above results (not surprising given the limited within variation possible in most of the variables over a period of four months).

Table 2: Relationship between mental health and childcare (ordered logit)

	(1)	(2)	(3)	(4)	(5)	(6)
	Wave 2 (level 3)			Wave 3 (level 1)		
Covariates	Female	Male	All	Female	Male	All
Childcare hours per weekday	0.018** (0.007)	0.024** (0.011)	0.019*** (0.006)	0.013 (0.011)	0.034* (0.017)	0.023** (0.009)
Location (Reference = lives in formal location)						
Lives in informal location	0.046 (0.176)	0.051 (0.192)	0.038 (0.125)	0.297* (0.167)	0.361* (0.190)	0.331** (0.135)
Lives in traditional location	-0.202 (0.183)	0.339 (0.251)	0.000 (0.145)	0.065 (0.183)	0.017 (0.225)	0.055 (0.139)
Lives on a farm or smallholding	-0.284 (0.187)	0.187 (0.310)	-0.090 (0.170)	-0.115 (0.208)	-0.136 (0.295)	-0.110 (0.164)
Married or cohabiting	-0.070 (0.119)	-0.131 (0.156)	-0.140 (0.102)	-0.138 (0.130)	-0.176 (0.187)	-0.149 (0.107)
Not employed	0.090 (0.132)	0.320* (0.170)	0.163 (0.104)	-0.232* (0.133)	0.022 (0.156)	-0.121 (0.097)
Household experienced a decrease in main source of income in past 4 weeks	0.192 (0.161)	0.307 (0.225)	0.224 (0.139)	0.146 (0.129)	0.344** (0.167)	0.242*** (0.086)
Someone in household experienced hunger in last 7 days due to lack of food	0.823*** (0.145)	0.505** (0.227)	0.670*** (0.131)	0.712*** (0.118)	0.856*** (0.154)	0.761*** (0.095)
Lives in a house/flat (otherwise, traditional/ informal/ other type of house)	0.093 (0.159)	0.302 (0.201)	0.179 (0.137)	-0.063 (0.206)	-0.314 (0.200)	-0.184 (0.164)
Perception of COVID-19 risk (Reference = not at risk of contracting COVID-19)						
Self-perceived uncertain risk of COVID-19	0.156 (0.163)	0.510** (0.246)	0.303** (0.141)	0.068 (0.196)	-0.529** (0.232)	-0.204 (0.154)
Self-perceived at risk of COVID-19	0.268* (0.152)	0.288* (0.158)	0.290** (0.118)	0.406*** (0.125)	0.108 (0.167)	0.274*** (0.104)
Years of schooling	0.038** (0.019)	0.025 (0.023)	0.030** (0.014)	0.022 (0.018)	-0.007 (0.023)	0.010 (0.014)
Age (years)	-0.002 (0.004)	-0.019*** (0.006)	-0.008** (0.004)	0.002 (0.005)	-0.001 (0.007)	0.001 (0.004)

Race (Reference = African)						
Coloured	0.976*** (0.275)	1.078*** (0.366)	1.014*** (0.180)	0.826*** (0.181)	1.271*** (0.293)	1.015*** (0.186)
Asian/Indian	0.620 (0.694)	0.099 (0.467)	0.230 (0.284)	0.327 (0.681)	0.475 (0.421)	0.410 (0.369)
White	1.050*** (0.276)	1.594*** (0.364)	1.253*** (0.217)	0.646* (0.348)	1.236*** (0.325)	0.905*** (0.240)
Male (otherwise, female)			0.108 (0.116)			0.108 (0.093)
Household member(s) received grant	0.017 (0.181)	-0.158 (0.185)	-0.038 (0.123)	0.195 (0.177)	-0.002 (0.173)	0.086 (0.121)
Number of co-resident children	-0.047 (0.034)	0.039 (0.048)	-0.009 (0.027)	0.025 (0.033)	0.048 (0.039)	0.033 (0.027)
Cutoff 1	0.879** (0.442)	0.528 (0.454)	0.779** (0.321)	0.588 (0.470)	-0.013 (0.487)	0.373 (0.344)
Cutoff 2	1.536*** (0.453)	1.120** (0.450)	1.402*** (0.323)	1.261*** (0.472)	0.714 (0.493)	1.066*** (0.349)
Cutoff 3	2.252*** (0.458)	1.825*** (0.459)	2.106*** (0.324)	2.033*** (0.468)	1.329*** (0.505)	1.761*** (0.352)
Cutoff 4	3.213*** (0.483)	2.934*** (0.469)	3.126*** (0.328)	2.897*** (0.475)	2.349*** (0.508)	2.690*** (0.351)
Cutoff 5	4.082*** (0.511)	3.769*** (0.511)	3.974*** (0.364)	3.884*** (0.473)	3.053*** (0.511)	3.533*** (0.351)
Cutoff 6	4.520*** (0.528)	4.116*** (0.547)	4.369*** (0.386)	4.390*** (0.467)	3.420*** (0.520)	3.960*** (0.349)
F	5.7	4.8	7.4	8.0	5.2	10.5
p	0	0	0	0	0	0
Number of observations	2 600	1 522	4 122	2 711	1 620	4 331

Note: Outcome is PHQ-2 depression scores. All statistics account for survey design and non-random attrition using appropriate weights. *, **, *** indicate statistical significance at 10%, 5% and 1% levels of significance respectively. Standard errors in parentheses

Table 3: Testing labour market-related factors possibly mediating the relationship between mental health and childcare

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Prevented work or made it difficult			Caused a reduction in hours of work			Prevented caregiver from searching for jobs		
VARIABLES	Female	Male	All	Female	Male	All	Female	Male	All
Childcare hours per weekday	0.016 (0.010)	0.007 (0.011)	0.014* (0.008)	0.015 (0.010)	0.014 (0.012)	0.015* (0.009)	0.014 (0.010)	0.011 (0.011)	0.012 (0.008)
Childcare prevented/impeded work (kidstopwork)	0.230 (0.242)	-0.022 (0.331)	0.171 (0.189)						
Childcare hours per weekday* kidstopwork	0.012 (0.015)	0.045* (0.024)	0.019 (0.013)						
Childcare caused reduced work hours (kidsredhrs)				0.265 (0.273)	0.147 (0.317)	0.215 (0.206)			
Childcare hours per weekday* kidsredhrs				0.011 (0.018)	0.025 (0.027)	0.015 (0.015)			
Childcare prevented job search (kidspresearch)							0.404* (0.228)	-0.132 (0.413)	0.173 (0.212)
Childcare hours per weekday* kidspresearch							0.016 (0.013)	0.040 (0.030)	0.026* (0.014)
Location (Reference = lives in formal location)									
Lives in informal location	0.230 (0.214)	0.103 (0.246)	0.170 (0.169)	0.219 (0.212)	0.090 (0.255)	0.166 (0.166)	0.204 (0.206)	0.083 (0.240)	0.157 (0.163)
Lives in traditional location	-0.117 (0.195)	0.677** (0.295)	0.174 (0.169)	-0.138 (0.195)	0.628** (0.292)	0.149 (0.169)	-0.168 (0.198)	0.643** (0.289)	0.134 (0.169)
Lives on a farm or smallholding	-0.406* (0.224)	0.207 (0.390)	-0.154 (0.219)	-0.419* (0.224)	0.200 (0.400)	-0.163 (0.222)	-0.432* (0.224)	0.220 (0.392)	-0.167 (0.219)
Married or cohabiting	-0.041 (0.128)	-0.300 (0.213)	-0.180 (0.116)	-0.029 (0.130)	-0.255 (0.211)	-0.161 (0.116)	-0.040 (0.130)	-0.283 (0.208)	-0.173 (0.116)
Household experienced a decrease in main source of income in past 4 weeks	0.206 (0.184)	0.176 (0.246)	0.108 (0.163)	0.211 (0.184)	0.264 (0.248)	0.152 (0.164)	0.136 (0.180)	0.217 (0.241)	0.099 (0.159)
Someone in household experienced hunger in last 7 days due to lack of food	0.728*** (0.164)	0.345 (0.225)	0.559*** (0.129)	0.774*** (0.160)	0.380* (0.229)	0.603*** (0.124)	0.655*** (0.158)	0.471** (0.223)	0.566*** (0.128)
Lives in a house/flat (otherwise, traditional/informal/ other type of house)	-0.044 (0.189)	0.043 (0.255)	0.007 (0.168)	-0.015 (0.192)	0.027 (0.252)	0.023 (0.172)	0.006 (0.188)	-0.016 (0.259)	0.021 (0.166)

Perception of COVID-19 risk (Reference = not at risk of contracting COVID-19)										
Self-perceived uncertain risk of COVID-19	0.124 (0.203)	0.346 (0.292)	0.228 (0.166)	0.145 (0.201)	0.388 (0.286)	0.244 (0.160)	0.167 (0.200)	0.347 (0.285)	0.234 (0.165)	
Self-perceived at risk of COVID-19	0.236 (0.181)	0.198 (0.211)	0.249* (0.134)	0.236 (0.186)	0.225 (0.208)	0.252* (0.137)	0.285 (0.184)	0.193 (0.210)	0.262* (0.137)	
Years of schooling	0.022 (0.018)	0.026 (0.031)	0.022 (0.016)	0.021 (0.018)	0.020 (0.033)	0.020 (0.017)	0.017 (0.018)	0.025 (0.032)	0.019 (0.016)	
Age (years)	0.001 (0.005)	-0.011 (0.010)	-0.003 (0.005)	0.001 (0.005)	-0.014 (0.010)	-0.004 (0.005)	0.003 (0.005)	-0.013 (0.009)	-0.002 (0.005)	
Race (Reference = African)										
Coloured	1.003*** (0.280)	1.695*** (0.560)	1.277*** (0.242)	0.970*** (0.281)	1.675*** (0.580)	1.258*** (0.255)	0.903*** (0.278)	1.709*** (0.560)	1.242*** (0.223)	
Asian/Indian	0.583 (1.067)	0.223 (0.607)	0.241 (0.357)	0.585 (1.060)	0.240 (0.630)	0.254 (0.363)	0.502 (0.888)	0.246 (0.626)	0.244 (0.342)	
White	1.185*** (0.340)	2.022*** (0.504)	1.519*** (0.287)	1.181*** (0.340)	2.066*** (0.500)	1.541*** (0.285)	1.209*** (0.326)	2.093*** (0.497)	1.554*** (0.284)	
Household member(s) received grant	0.004 (0.224)	-0.093 (0.225)	-0.019 (0.153)	-0.001 (0.223)	-0.041 (0.230)	-0.003 (0.153)	-0.104 (0.214)	-0.078 (0.230)	-0.072 (0.157)	
Number of co-resident children	-0.044 (0.040)	0.005 (0.062)	-0.020 (0.032)	-0.039 (0.040)	-0.002 (0.063)	-0.017 (0.032)	-0.034 (0.039)	-0.000 (0.063)	-0.013 (0.031)	
Male			0.272* (0.149)			0.263* (0.149)		0.258* (0.148)		
Cutoff 1	0.844* (0.497)	0.364 (0.642)	0.786* (0.403)	0.841* (0.487)	0.315 (0.643)	0.796** (0.400)	0.808* (0.484)	0.311 (0.638)	0.773* (0.400)	
Cutoff 2	1.515*** (0.510)	0.905 (0.643)	1.396*** (0.409)	1.506*** (0.501)	0.848 (0.644)	1.399*** (0.407)	1.484*** (0.498)	0.821 (0.638)	1.374*** (0.406)	
Cutoff 3	2.284*** (0.508)	1.655** (0.666)	2.145*** (0.413)	2.272*** (0.498)	1.600** (0.663)	2.147*** (0.410)	2.258*** (0.494)	1.575** (0.661)	2.127*** (0.409)	
Cutoff 4	3.203*** (0.531)	2.702*** (0.655)	3.103*** (0.411)	3.188*** (0.520)	2.635*** (0.652)	3.101*** (0.408)	3.191*** (0.520)	2.626*** (0.647)	3.095*** (0.406)	
Cutoff 5	4.040*** (0.543)	3.602*** (0.708)	3.952*** (0.451)	4.026*** (0.534)	3.516*** (0.707)	3.946*** (0.449)	4.031*** (0.532)	3.520*** (0.696)	3.946*** (0.445)	
Cutoff 6	4.388*** (0.538)	4.089*** (0.762)	4.355*** (0.477)	4.375*** (0.527)	3.996*** (0.753)	4.348*** (0.474)	4.379*** (0.525)	4.013*** (0.744)	4.352*** (0.470)	
F	4.969 0	3.409 2.19e-06	7.183 0	4.484 1.24e-09	3.528 1.05e-06	7.610 0	5.230 0	3.170 9.58e-06	7.446 0	
p	0	2.19e-06	0	1.24e-09	1.05e-06	0	0	9.58e-06	0	
Observations	2 080	1 025	3 105	2 076	1 023	3 099	2 091	1 019	3 110	

Note: Outcome is PHQ-2 depression scores; Samples restricted to individuals who spent time on childcare; All statistics account for survey design and non-random attrition; *, **, *** indicate statistical significance at 10%, 5% and 1% level of significance; Standard errors in parentheses

Discussion

The COVID-19 pandemic has caused significant disruptions, not least in the area of childcare by parents and guardians. The pandemic brought about movement restrictions and school closures, resulting in families having to shoulder additional childcare responsibilities. Even with the progressive relaxation of lockdowns and the gradual re-opening of schools, many schools adopted remote teaching and learning, with the implication that parents and caregivers had to spend more time than usual helping children with schoolwork. Furthermore, many parents still felt anxious about taking their children to school partly due to the fear of them contracting the virus and/or infecting other family members. For instance, about 72% of adult respondents in the second wave of the NIDS-CRAM survey conducted in July – August 2020 indicated that they were very worried about children returning to school (Mohohlwane, Taylor, & Shepherd, 2020). Thus, school closure regulations, concerns for children's safety and economic hardship caused by the pandemic resulted in parents and guardians shouldering more childcare responsibilities than normal. Sometimes, such additional childcare responsibilities occurred in the context of parents and caregivers having to carry on with their usual work routine as well as managing the stressful environment occasioned by the COVID-19 pandemic. Given the foregoing, this paper ascertained whether time spent looking after children during weekdays was associated with depression during the pandemic.

Our finding of a positive relationship between childcare and depressive symptoms concurs with other evidence uncovered especially during the pandemic. For instance, a study in Poland found that parents expressed anxiety about the future of their children, while not feeling generally confident about their competence and the home-schooling solutions they adopted during the pandemic (Parczewska, 2020). A study in Australia highlighted the general frustration parents experienced in home-schooling or helping their children with remote learning during the pandemic. The study, which analysed Twitter comments with regard to the pandemic-induced lockdown, revealed the physical and mental health challenges of home-schooling and its potential to negatively affect family relationships. Some of the respondents' comments included, "... I talk to parents everyday. I'm bloody frustrated and exhausted and angry too", as well as, "I honestly could not do home-schooling for a term. My son would suffer academically and our relationship would suffer" (Ewing & Vu, 2020, p. 6).

We found a stronger relationship between childcare and mental health in men than women across all specifications (given the larger coefficient of the childcare variable in the male regressions). This male "mental health penalty" of childcare numerically increased over time with the closing of the gender gap in childcare. We note that our finding of a closing of the gender gap in time spent on childcare between wave 2 and wave 3 appears to contradict earlier evidence on the change between wave 1 and wave 2 for men and women living with children as reported by Casale and Shepherd (2020). That men's mental health seems to have suffered more than women's due to childcare responsibilities may not be unconnected with the well-known fact that cultural norms have historically viewed childcare as largely a woman's job (Morrell, Dunkle, Ibragimov, & Jewkes, 2016; Shabangu & Brear, 2017; Van de Vijver, 2007), with the effect that when men are forced by circumstances like COVID-19 to spend time more than used to be the norm on childcare, such may result in a significantly elevated risk of depressive symptoms for them. That said, prior evidence in South Africa indicates that cultural norms that disadvantage women are now being challenged relative to what obtained previously especially among more privileged groups (Mantell et al., 2009).

International evidence especially before the pandemic on the relationship between sharing of childcare and housework in general on the one hand, and mental health and subjective wellbeing on the other, is mixed (see Van de Vijver, 2007 for a synthesis). Some scholars have found evidence that spending more time on childcare is positively associated with depression or lower levels of life satisfaction (Berger, 2013; Glass & Fujimoto, 1994; Golding, 1990; Kurdek, 1993; Sheppard, 1994; Stutzer & Frey, 2006). A study of parents' subjective wellbeing regarding time spent with their children found that mothers reported less happiness, greater stress and more fatigue in the time they spent with their children compared to the fathers' experiences (Musick, Meier, & Flood, 2016). However, the authors noted that the gender gaps in subjective wellbeing were relatively small and

could be explained by gendered differences in the activities being undertaken. Similarly, Roeters and Gracia (2016) noted that mothers found childcare time to be more stressful than fathers in the US, with fathers finding such time more meaningful. However, the relationship was nuanced, with mothers cherishing time spent with minors while finding time with adolescent children stressful while fathers found time spent with minors stressful while time spent with middle school age children was highly meaningful to them. Also, studying various immigrant groups in the Netherlands, Van de Vijver (2007) found that sharing childcare and other housework responsibilities (as well as having more egalitarian gender-role beliefs) was associated with better wellbeing across all cultural groups. On the other hand, Glass and Fujimoto (1994) found that men who share housework responsibilities report less wellbeing than their counterparts who abide by more traditional household division of labour. Similarly, Sweeting, Bhaskar, Benzeval, Popham, and Hunt (2014) found that among adults in the UK, men with more traditional gender role attitudes (GRAs) exhibited higher levels of psychological distress than their counterparts with less traditional GRAs. However, some studies found no relationship between men's housework responsibilities and their psychological health (Golding, 1990).

The literature on home-making and subjective wellbeing in South Africa echoes some of our findings as well as the international literature. For instance, Posel and Casale (2015) have found that the presence of children in the household was associated with lower subjective wellbeing for women while such a relationship did not exist for men. While our outcome is not necessarily subjective wellbeing but an indicator of depression, it is clear that our findings do not necessarily concur with their study given that both men and women experienced a positive relationship between childcare and worse depression outcome. It is also important to note the subtle distinction between the key determinant in each study, where ours is the number of hours of childcare while it was the presence of children in Posel and Casale (2015).

Hunger was significantly correlated with depression. This is not unexpected given the demonstrated evidence of a relationship between food insecurity and mental health (L. J. Weaver & Hadley, 2009). Also, our finding of worse mental health outcomes among non-Africans during the COVID-19 pandemic in South Africa concurs with earlier studies in this regard even though pre-pandemic evidence showed a non-significant race gradient (Oyenubi & Kollamparambil, 2020). The reasons for this apparent reversal during the pandemic are not clear and therefore warrant more in-depth analysis.

We also found that perceiving oneself to be at risk of contracting COVID-19 was significantly associated with worse mental health for both women and men as well as in the general population. This finding echoes an earlier study which indicated that the fear of COVID-19 was higher in areas with more reported COVID-19 infections and was significantly associated with depression and anxiety in the US (Fitzpatrick, Harris, & Drawve, 2020). However, we found that being uncertain about one's risk of contracting the disease had mixed results. Furthermore, we view as worrisome our finding of an increase in the proportion of the population who perceived themselves to not be at risk of contracting COVID-19 as well as a decline in the proportion who viewed themselves at risk of contracting the virus. This is especially concerning as the country (like many other countries) has entered a second wave of COVID-19. It is even more concerning given that South Africa has reported a more infectious and perhaps more deadly strain of the virus (Steinhauser, 2021).

Our findings on the relationship between non-employment status and depression were mixed, indicating a positive relationship among males in wave 2 and a negative relationship among females in wave 3. Otherwise, the relationship was statistically insignificant. A previous study in South Africa found that relative to being employed, specializing in household production was associated with lower subjective wellbeing among women (Posel & Bruce-Brand, 2020). They also found that the employment premium largely stemmed from regular employment rather than casual employment. Another study involving more than 90 countries found that a low rate of female non-agricultural employment was associated with higher female life satisfaction relative to males (Meisenberg & Woodley, 2015).

As earlier indicated, the labour market played an important role in mediating the relationship between childcare and depression. We found that childcare preventing or impeding caregivers from working played a significant role in its association with depression especially among males, while the mediating role of childcare preventing job search was only statistically significant in the population. However, it did not appear that childcare resulting in a reduction in hours worked played a significant role in mediating the relationship between childcare and depression. While a number of studies have found that parents (especially mothers) quit the workforce during the child-rearing phase, much of the focus has been on the career effects of such work interruptions (see e.g. Zhou, 2015). An exception is a study in Canada which found that a childcare subsidy policy which increased female labour force participation resulted in a worsening of life satisfaction for higher educated women but an improvement in life satisfaction among less educated women (Brodeur & Connolly, 2013). Though some scholars have studied the mental health effects of career interruptions of mothers (Frech & Damaske, 2012), studies examining the mental health consequences of childcare for both men and women in the context of a pandemic are virtually non-existent to our best knowledge. Our finding that childcare-related work cessation/impediment or inability to search for work intensified the relationship between childcare and depression is indeed novel especially in South Africa. This study, therefore, makes the case for increased emphasis on the mental health implications of childcare-related career interruptions and inability to get into the labour market especially during periods of significant socioeconomic upheaval as exemplified by the current pandemic.

Our finding that women spent more time on childcare relative to men is not surprising and has been found elsewhere. For instance, Del Boca, Oggero, Profeta, and Rossi (2020) found that in Italy, most of the extra housework and childcare associated with COVID-19 were borne by women. However, childcare activities were more equally shared among couples than other housework activities. In a multi-country study involving academics from France, Germany, Turkey, Norway, Sweden, Italy, the UK and the USA, it was found that having children disproportionately affected the amount of housework done by female academics compared to their male colleagues, suggesting that women were more likely to engage in childcare than men in similar occupations (Yildirim & Eslen-Ziya, 2020). Moreover, the narrowing of the “childcare burden gap” between women and men as found in this study conforms to earlier assertions made about the pandemic, where it was posited that the pandemic would result in fathers assuming greater primary responsibility in childcare, thereby eroding social norms which disfavour women in terms of the distribution of housework and childcare (Alon, Doepke, Olmstead-Rumsey, & Tertilt, 2020).

This paper has a number of strengths. One, it examines an important consequence of a major disaster like the COVID-19 pandemic, i.e. poor mental health. Additionally, its longitudinal nature allowed for a comparison of the experiences of respondents over time, albeit a short one. However, a limitation of the study is that the aforementioned relationship between childcare and mental health is not causal. Indeed, there is evidence that suggests that poor mental health can affect childcare (Ewing & Vu, 2020). However, we suspect that such reverse causality issues would at most attenuate the observed relationship given that pre-existing poor mental health would likely reduce the amount of time parents spend with their children (Ewing & Vu, 2020). To the extent that this is true, our estimates may be viewed as lower bounds of the impact of childcare on mental health in South Africa during the COVID-19 pandemic. Furthermore, childcare was self-reported. While this does not necessarily mean that it is biased, it would have been desirable to have a more objective analogue obtained via, say, the diary method if only for sensitivity and triangulation purposes.

Conclusion

This paper has analysed the relationship between childcare and depression in South Africa during the COVID-19 pandemic, disaggregating the analysis by gender. First, we find evidence of substantial need for childcare services especially given the economic devastation caused by the pandemic as well as concerns over the safety of formal childcare services within the context of the pandemic. Together with other salient factors, these issues have resulted in a substantial childcare burden for parents and guardians, thus raising the possibility of adverse mental health outcomes. We find that

though there were no significant gender differences in probable depression in the July – August and November – December 2020 periods, mental health outcomes worsened in the population over both periods. As expected, women spent significantly more time looking after children than men. However, the gender gap in the average number of hours spent on childcare per weekday declined (from 4.6 hours to 1.6 hours). The regression results indicate that spending more time looking after children is associated with worse depression outcome, with the relationship stronger among men than women in numerical terms especially in the November – December 2020 period. Some labour market outcomes related to childcare mediate the relationship between childcare and mental health. These are when childcare prevents or hinders (especially male) caregivers from working and when it prevents those out of the labour force from searching for jobs. Thus, it is clear that childcare not only has an associated significant mental health burden; it also acts as a significant impediment to gainful participation in the labour market. This study posits that policy response to the pandemic and pandemic control measures must prioritize the mental health of parents and guardians especially with the emergence of a second wave of the pandemic in South Africa. Perhaps, measures like encouraging employers to implement flexible work schedules, encouraging greater communication between parents and school authorities in the event of further school closures and job search assistance to parents and guardians may be helpful in ameliorating the mental health effects of childcare responsibilities during the pandemic.

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