




Social support as a mediator of stress and life satisfaction for people with intellectual or developmental disabilities during the COVID-19 pandemic

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Abstract

Introduction: This study examined factors that predict stress level and life satisfaction among adults with intellectual or developmental disabilities during the COVID-19 pandemic and the role of social support.

Method: From a larger study about the experiences during the pandemic of 2020 individuals with and without disabilities, 181 adults with intellectual or developmental disabilities (or proxy) responded.

Results: Most respondents with intellectual or developmental disabilities (92.8%) reported negative impacts from the pandemic, with 55.2% of the 96 employed pre-pandemic reporting impacted employment, including job loss. The negative impact of the pandemic was a significant predictor of stress level; social support was related to reduced stress. Stress level and the negative impact of the pandemic were inversely related to life satisfaction; social support was positively related to life satisfaction. Social support partially mediated the association between stress level and life satisfaction.

Discussion: Comprehensive services and social support systems are needed to combat the impact of the pandemic.

KEYWORDS

COVID-19, employment, satisfaction with life, social support, stress, well-being

1 | INTRODUCTION

The COVID-19 pandemic brought the world to a standstill as countries implemented large-scale containment efforts, including ‘social distancing’ and stay-at-home orders (Jacobson et al., 2020). Despite the protections to physical health, the stay-at-home orders have had a detrimental impact on mental health and well-being (Campion et al., 2020), particularly for those within the disability community. For example, parents and caregivers of individuals with disabilities experienced negative impacts on mental health due to increased caregiving needs, fear of contracting the virus and rising

financial pressures (Asbury et al., 2020; Embregts et al., 2021; Lunsby et al., 2021; Willner et al., 2020) and negative impacts on quality of life and well-being (Jeste et al., 2020; Patel et al., 2021). Parents and caregivers also reported a loss of social supports and essential services (Neece et al., 2020; Willner et al., 2020). Children with disabilities lost access to educational, therapeutic and healthcare services (Jeste et al., 2020; Pellicano & Stears, 2020).

Less is known, however, about the impact of the pandemic on the life and well-being of adults with intellectual or developmental disabilities. Prior to the pandemic, individuals with intellectual or developmental disabilities (e.g., intellectual disability, autism spectrum disorder [ASD], learning disabilities, attention deficit hyperactivity disorder [ADHD]; Zablotsky et al., 2019) reported higher rates of anxiety and depression

than individuals without disabilities (Hsieh et al., 2020). Heightened anxiety and depression were also associated with co-occurring chronic health conditions and changes in stressful life events. Thus, given that individuals with intellectual or developmental disabilities are already more vulnerable to experiencing stress, anxiety and depression (Campion et al., 2020; Hassiotis et al., 2020; Pellicano & Stears, 2020), especially in response to stressful life events (Hsieh et al., 2020), this risk may be further exacerbated during the pandemic.

Individuals with intellectual or developmental disabilities also have a heightened risk of exposure to COVID-19, especially those who require daily care or support, use shared or public transportation and who reside in communal living settings (Gleason et al., 2021). If individuals with intellectual or developmental disabilities do contract COVID-19, they are also at greater risk of experiencing adverse health effects due to a higher incidence of comorbid health conditions that lead to greater complications from COVID-19 (e.g., heart conditions, lung disease, obesity and diabetes) and to being admitted to the hospital (Gleason et al., 2021; Perera et al., 2020). Given these heightened health risks, including a greater risk of death, individuals with intellectual or developmental disabilities are experiencing extraordinary stress and fear of the virus (Amor et al., 2021).

In addition to the stress and fear of becoming sick (Alexander et al., 2020), individuals with intellectual or developmental disabilities may experience increased stress because they are also more likely to face social adversity and health inequities when being treated in healthcare systems during the pandemic (Hassiotis et al., 2020). Adults with intellectual or developmental disabilities may also experience stress related to social distancing (Courtenay & Perera, 2020; Pellicano & Stears, 2020) and the closure of non-essential businesses may impact the employment of adults with intellectual or developmental disabilities, increasing stress as these individuals already experience difficulties finding and maintaining employment (Nord et al., 2013; Okyere et al., 2021). All of these may also cause changes in routines or support personnel, potentially leading to anxiety, paranoia and increases in challenging behaviours (Courtenay & Perera, 2020; Wieting et al., 2021).

Given the unknown long-term psychosocial and employment impacts of the pandemic, it is critical that we determine how adults with intellectual or developmental disabilities were affected so that we can immediately address disparities and ensure continuity of services post-pandemic (Bigby, 2020; Okyere et al., 2021; Thompson & Nygren, 2020). Further, although stress experienced by people with intellectual or developmental disabilities is linked to many mental health and behavioural problems (Esbensen & Benson, 2006; Hulbert-Williams et al., 2011), social support has a powerful influence on an individual's mental health and subjective well-being and may serve a protective role to ameliorate mental health and behavioural issues (Bishop-Fitzpatrick et al., 2018; Lunsby & Benson, 2001; Scott & Havercamp, 2014; Sung et al., 2021).

The current study was conducted to determine how adults with intellectual or developmental disabilities were impacted by the COVID-19 pandemic and what factors were associated with stress level and life satisfaction during the pandemic. In addition, we explored whether heightened stress was related to reduced satisfaction with life and whether social support mediated the relationship

between stress and life satisfaction among individuals with intellectual or developmental disabilities. For the purposes of this article, social support refers simply to the participants' perceptions or descriptions of available social support. Our research questions were

- (1) How were individuals with intellectual or developmental disabilities impacted by the pandemic, including impacts on employment and on their life in general?
- (2) What demographic, personal, and environmental factors predict stress level and life satisfaction during the pandemic for adults with intellectual or developmental disabilities?
- (3) Does social support mediate the relationship between stress level and life satisfaction for adults with intellectual or developmental disabilities during the pandemic?

2 | METHOD

2.1 | Recruitment and participants

To gather responses globally, a web-based survey was developed and translated from English into 13 other languages by native speakers of those languages. After institutional review board approval, the survey was uploaded to the Qualtrics online survey platform. A flyer containing the survey link was distributed worldwide through emails, listservs and social media posts to recruit individuals with and without disabilities and/or chronic health conditions, ages 18 years and older. Using convenience sampling, the research team reached out to personal contacts within universities, as well as local and international agencies and groups and asked them to distribute the survey to potential participants with and without disabilities within their networks. The survey was available from early-April 2020 until late-May 2020 (see Okyere et al., 2021; Sung et al., 2021 for more details about the larger study).

From the larger dataset of 2028 adults with and without disabilities, data from those individuals who indicated the presence of an intellectual or developmental disability were extracted for the current study. Specifically, 181 (9.3%) respondents indicated the presence of an intellectual or developmental disability with 107 (59.1%) explicitly indicating a presence of an intellectual disability or a genetic condition commonly associated with intellectual disabilities (e.g., Down syndrome, Williams syndrome). The mean age of the sample was 33.40 (SD = 13.80) years with a range from 18 to 79 years. Please see Table 1 for additional participant information.

The majority of respondents for the current study were from North America (64.1%), with the remainder from Europe (23.8%) and Asia (12.2%). All countries in which respondents were living were experiencing lockdown restrictions during the survey period. To increase participation of those with significant disabilities, there was the option for a proxy respondent to complete the survey on behalf of an individual with an intellectual or developmental disability; 85 surveys (47%) were completed by a proxy respondent (e.g., parents, guardians). Proxy respondents were provided the instructions, 'If you are completing this on behalf of someone else, please remember to answer the following

TABLE 1 Demographic characteristics for the total sample of adults with an intellectual or developmental disability

	Total (n = 181)	% of sample
Gender		
Female	89	49.2
Male	80	44.2
Other	12	6.6
Country by continent		
North America	116	64.1
United States	105	90.5
Canada	11	9.5
Europe	43	23.8
Germany	40	93.0
Other	3	7.0
Asia	22	12.2
South Korea	17	77.3
Other	5	22.7
Respondent		
Self	96	53.0
Proxy	85	47.0
Diagnosis ^a		
ASD	36	19.9
Intellectual disability	107	59.1
Other DD	61	33.7
Living situation		
By themselves	22	12.2
With roommates	14	7.7
With partner and/or children	30	16.6
With parents and/or siblings	98	54.1
In group home/assisted living	15	8.3
Employed before COVID-19	96	53.0
Part time	58	60.4
Full time	38	39.6

Abbreviations: ASD, autism spectrum disorder; DD, developmental disability.
^aRespondents could indicate more than one diagnosis.

questions only about that person'. Given the subjective report of perceived stress level, life satisfaction, and social support, independent t-tests were conducted and confirmed that there were no significant differences between self and proxy respondents on these dependent variables.

2.2 | Measures

The survey was developed by a group of five international disability research scholars specifically to understand how the COVID-19 pandemic has impacted individuals worldwide, including individuals with an intellectual or developmental disability. With many countries under stay-at-home orders to avoid the spread of the virus, the use of an

online survey allowed for collection of data from respondents while they were following these orders. This also allowed them to reflect on their experiences of the stay-at-home orders and the impact of COVID-19 while they were currently experiencing the event. As the goal was to study the novel experiences with the COVID-19 pandemic, the survey included COVID-19 specific questions that were descriptive and exploratory in nature (Schlenger & Silver, 2006) and measures for assessing the psychosocial impact of the pandemic.

2.2.1 | Demographics and COVID-19 pandemic specific questions

Respondents first provided basic demographic information related to their sex, age, country of residence and disability status. Disability specific questions included, 'Do you have a disability or other special healthcare need?' and then, 'What is your disability/diagnosis? Please check all groups of disability that apply and then provide your specific diagnosis: (a) Cognitive Disability; (b) Developmental Disability; (c) Neurological Disability; (d) Sensory Disability; (e) Physical Disability; (f) Learning Disability; (g) Psychiatric Disability; (h) Chronic Health Condition; (i) A disability, impairment or condition not listed above'. Open-ended responses were then examined and coded to identify all respondents who indicated the presence of an intellectual or developmental disability condition as defined by the National Institute of Child Health and Human Development (2016), including examples such as ADHD, ASD, learning disability, intellectual disability conditions including genetic disorders and speech and language delays.

Next, respondents answered questions related specifically to their experiences of the pandemic. These questions were developed by the research team and were kept broad enough to allow respondents to consider their own personal experiences with the pandemic. Response options were either on a rating scale or a list of options for respondents to choose from, with a text box for additional comments. Examples of questions included whether the pandemic had negatively impacted their life (no negative impact; little bit of negative impact; or very large negative impact on my life), whether they were employed prior to the pandemic, and if so, whether and how their employment was impacted (e.g., laid off or dismissed from employment; told to work from home; chose not to work due to personal/health reasons; and/or changes in work hours/income/pay rate).

2.2.2 | Perceived Stress Scale

The Perceived Stress Scale (PSS; Cohen et al., 1983) contains 10 items assessing an individual's perceived level of stress. Respondents rated how often they have felt a certain way on a 5-point scale (never (0) to very often (4)). To understand the impact of the COVID-19 pandemic on stress level, the wording on the PSS was changed from 'within the last month' to 'currently' (Cronbach $\alpha = .859$ for the current sample). Four items were reverse scored and a total score (range: 0–40) was calculated, with higher scores indicating more stress and a total score

of 13 or less indicating low stress, 14–26 indicating moderate stress and 27–40 indicating high stress. There were no significant differences for respondents based on continent, $F(2, 164) = 1.05$, *ns*. Although the PSS has been used successfully in other studies with adults with ASD with authors reporting strong reliability estimates (e.g., Bishop-Fitzpatrick et al., 2018), it is not clear whether it has been used with adults with other intellectual or developmental disabilities.

2.2.3 | Satisfaction with Life Scale

The Satisfaction with Life Scale (SWLS; Diener et al., 1985) measures an individual's judgement of their global life satisfaction. Respondents rated five items using a 7-point scale (strongly disagree (1) to strongly agree (7)). To assess the impact of the COVID-19 pandemic on life satisfaction, the scale was given with the instructions 'indicate your agreement with each item as you are feeling *right now*, in this moment' ($\alpha = .854$ for the current sample). A total score (range: 5–35) was used, with higher scores indicating greater life satisfaction and a score between 31–35 indicating extremely satisfied, 26–30 indicating satisfied, 21–25 indicating slightly satisfied, 20 indicating neutral, 15–19 indicating dissatisfied, 10–14 indicating slightly dissatisfied and 5–9 extremely dissatisfied (Pavot & Diener, 2008). There were no significant differences for respondents based on continent, $F(2, 170) = 0.40$, *ns*. The SWLS has been used in previous research with adults with intellectual or developmental disabilities (e.g., Lucas-Carrasco & Salvador-Carulla, 2012).

2.2.4 | Multidimensional Scale of Perceived Social Support

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) examines an individual's perception of support they receive from family, friends, and significant others. Respondents rated their agreement to 12 items on a 7-point scale (very strongly disagree (1) to very strongly agree (7)). The phrase 'right now, at this moment' was added to the general scale instructions to assess social support during the pandemic ($\alpha = .937$ for the current sample). The total score (range: 12–84) was used, with higher scores indicating greater social support. Participants in Asia reported lower levels of social support ($m = 56.45$ (19.40)) compared to those in North America (66.40 (14.25)) and Europe (65.22 (14.88)), $F(2, 160) = 3.67$, $p = .028$. Although the MSPSS has been used successfully in other studies with adults with ASD with authors reporting strong reliability estimates (e.g., Alvarez-Fernandez et al., 2017), it is not clear whether it has been used with adults with other intellectual or developmental disabilities.

2.3 | Data analysis

Descriptive statistics and correlation analyses were conducted to evaluate the impact of the pandemic and to examine the relationship between demographic covariates, stress level, social support and life

satisfaction. Separate multiple regression analyses were conducted to examine the relative contributions of demographic covariates (i.e., number of people reside with), personal (i.e., life impacts) and environmental factors (i.e., employment impacts, social support) in predicting stress level and life satisfaction during the pandemic. To test the hypothesis that the association between stress level and life satisfaction is mediated by social support, SPSS macro for mediation analyses (Hayes, 2018) was used to test the significance of the indirect effects of stress level (independent variable (IV)) on life satisfaction (dependent variable (DV)) through the mediator (M) social support.

3 | RESULTS

3.1 | Impact of the COVID-19 pandemic

First, the majority of respondents with intellectual or developmental disabilities (92.8%) indicated they felt the pandemic at least somewhat negatively impacted their life. Among those 96 who were employed prior to the pandemic, over half (55.2%) indicated their employment was impacted (see Table 2 for specific ways in which employment was impacted).

Second, the average stress score for participants with an intellectual or developmental disability, 20.83 (SD = 6.91; range: 6–40), was

TABLE 2 Impact of the COVID-19 pandemic on individuals with intellectual or developmental disabilities

	Total (n = 181)	% of sample	Mean (SD)
Impact on life			
No negative impact	8	4.5	
Little bit of negative impact	79	44.9	
Very large negative impact	89	50.6	
Employed prior to COVID-19	96	53.0	
Employment impacted among the 96 who were employed	53	55.2	
Laid off or dismissed from employment	18	34.0	
Told to work from home	12	22.6	
Chose not to work due to personal/health reasons	12	22.6	
Changes in work hours/income/pay rate	15	28.3	
Other	15	28.3	
Stress level			20.83 (6.91)
Satisfaction with life			20.92 (7.29)
Social support			64.91 (15.33)

in the moderate range. More specifically, 67.7% scored within the moderate stress range (e.g., scores between 14 and 26) and 17.4% scored within the high stress range (e.g., scores between 27 and 40). The average satisfaction with life score was 20.92 (SD = 7.29; range: 5–35) and nearly half (48%) reported neutral or dissatisfaction with life. Finally, the average social support score was 64.91 (SD = 15.33; range: 12–84) (see Table 2).

3.2 | Correlations between personal and environmental variables

The perceived negative impact of the pandemic on life was positively correlated with stress level and inversely correlated with life satisfaction during the pandemic. Life satisfaction was positively correlated with perceived support ($r = .350, p < .001$) but inversely correlated with stress level during the pandemic ($r = -.559, p < .001$) (see Table 3).

3.3 | Predicting stress level during COVID-19

The first regression model included stress level as the dependent variable and four predictor variables were entered. The model was significant ($R^2 = .314, F(3, 159) = 25.74, p < .001$) and accounted for 31.4% of the variance in stress level during the pandemic. This is considered a large effect size (Cohen, 1988, 1992). Once all other factors were controlled, stress level during COVID-19 was significantly predicted by: negative impact of COVID-19 on personal life ($\beta = .428, p < .001$) and social support ($\beta = -.368, p < .001$). Negative impact of the pandemic on personal life was positively correlated with stress level, corresponding to a 0.43 standard deviation (SD) unit increase in stress level. However, it was inversely correlated with social support, with each SD unit increase in social support corresponding to 0.37 SD unit decrease in stress level (see Table 4).

3.4 | Predicting life satisfaction during COVID-19

The second regression model included life satisfaction as the dependent variable and five predictor variables were entered. The regression model was significant ($R^2 = .351, F(4, 158) = 22.88, p < .001$) and accounted for 35.1% of the variance in life satisfaction during the

pandemic. Again, this is a large effect size (Cohen, 1988, 1992). Once all other factors were controlled, life satisfaction during COVID-19 was significantly predicted by: negative impact of the pandemic on personal life ($\beta = -.201, p = .006$), stress level during COVID-19 ($\beta = -.399, p < .001$), and social support ($\beta = .196, p = .005$). The negative impact of the pandemic on personal life and stress level during the pandemic were inversely correlated and corresponded to a 0.20 and 0.40 SD unit decrease in life satisfaction, respectively. However, life satisfaction was positively correlated with social support; each SD unit increase in social support corresponded to a 0.20 SD unit increase in life satisfaction (see Table 5).

3.5 | Social support as mediator between stress and life satisfaction

The association between stress level (IV) and life satisfaction (DV) was significant ($\beta_c = -.559, t = -8.56, p < .001$) and stress level (IV) was significantly related to social support (M) ($\beta_a = -.379, t = -5.20, p < .001$). While statistically controlling for stress level (IV), social support (M) was found to be significantly associated with life satisfaction (DV) ($\beta_b = .161, t = 2.31, p = .022$). The model accounted for 34% of the variance in life satisfaction, $R = .579, R^2 = .335, F(2, 160) = 40.29, p < .001$, which is considered a large effect size (Cohen, 1988, 1992). The significant results support the proposed mediation model (see Figure 1). The findings match the predictions of a model in which stress level is associated with life satisfaction indirectly through its association with social support which is also uniquely associated with life satisfaction.

In addition, when examining the association between stress level and life satisfaction, the relationship was still significant ($\beta_c = -.498, t = -7.15, p < .001$) when the intervening variables (social support) were controlled. This type of finding, with significant indirect effects through the mediator accompanied by significant direct effects was characterised as partial mediation. Consistent with the mediation model, the standardised indirect effects (with 95% CIs obtained from bias-corrected and accelerated bootstrap procedures) were products ' (ab) ' = -0.061 ($-0.131, -0.005$) for the indirect paths through social support. The individual paths a and b were significant for the mediator and the 95% CIs of the products ' (ab) ' do not include zero, demonstrating that the indirect effect is significant ($p < .05$).

TABLE 3 Correlation matrix between demographic covariates and psychosocial variables of individuals with intellectual or developmental disabilities

	1	2	3	4	5
1. Stress level ^a	1	-	-	-	-
2. Life satisfaction ^a	-.559**	1	-	-	-
3. Social support ^a	-.379**	.350**	1	-	-
4. COVID-19 impact (life) ^b	.430**	-.346**	.034	1	-
5. COVID-19 impact (employment) ^b	.061	-.066	-.063	.060	1

^aPearson r was reported.

^bSpearman ρ was reported.

** $p < .001$.

TABLE 4 Regression model of factors predicting stress level of individuals with intellectual or developmental disabilities during the COVID-19 pandemic

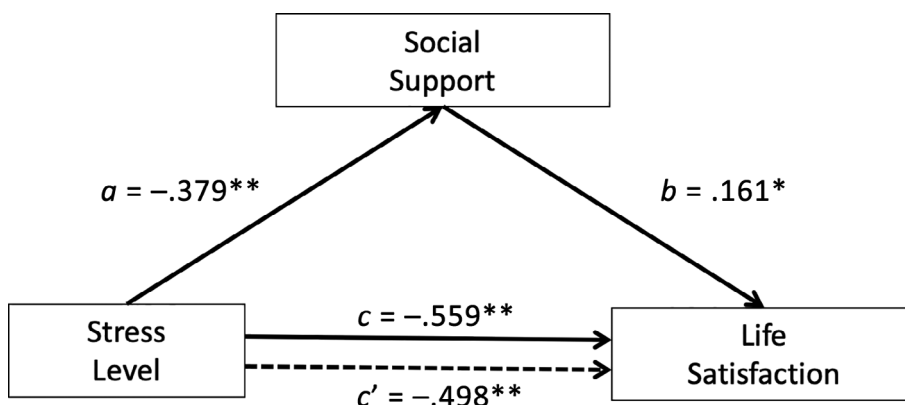
Predictor variable	Unstandardised coefficients		Standardised coefficients		
	B	SE	β	t	p
COVID-19 impact (life)	5.150	0.784	.428	6.567	<.001
COVID-19 impact (employment)	0.025	1.000	.002	0.025	.980
Social support	-0.168	0.030	-.368	-5.631	<.001

Note: $R^2 = .314$, $F(3, 159) = 25.74$, $p < .001$.

TABLE 5 Regression model of factors predicting life satisfaction of individuals with intellectual or developmental disabilities during the COVID-19 pandemic

Predictor variable	Unstandardised coefficients		Standardised coefficients		
	B	SE	β	t	p
COVID-19 impact (life)	-2.550	0.909	-.201	-2.806	.006
COVID-19 impact (employment)	0.404	1.028	.025	0.393	.695
Stress level	-0.421	0.082	-.399	-5.166	<.001
Social support	0.094	0.034	.196	2.816	.005

Note: $R^2 = .351$, $F(4, 158) = 22.88$, $p < .001$.

**FIGURE 1** A partial mediation model of the relationship between stress level and life satisfaction mediated through social support. * $p < .05$; ** $p < .01$; ab = indirect effects; c' = direct effect; c = total effect

4 | DISCUSSION

The current study found that the pandemic negatively impacted the life of the majority of respondents with an intellectual or developmental disability. Of those who were employed before the pandemic, over half experienced an impact on employment, including job loss, changes in work hours or income or being told to work from home. Beyond these societal impacts, individuals with an intellectual or developmental disability also experienced moderate levels of stress and nearly half of the participants reported neutral satisfaction to dissatisfaction with life. Moreover, the negative impacts of the pandemic on life and social support predicted the individuals' stress level during the pandemic. Additionally, the negative impacts of the pandemic on life, stress level during the pandemic and social support predicted life satisfaction during the pandemic. Finally, social support was found to be a partial mediator, mediating the relationship between individuals' stress levels and satisfaction with life.

Given the data for this study were collected at the onset of the pandemic, many of the issues presented, such as social isolation, poor psychosocial well-being and impacted employment, are still ongoing and will likely continue well beyond the end of the pandemic. This is concerning as these psychosocial and vocational challenges were already more likely to occur for individuals with intellectual or developmental disabilities pre-pandemic (Nord et al., 2013), and may be further exacerbated post-pandemic, resulting in poorer quality of life among the population. Indeed, recent research examining the effects of the COVID-19 pandemic in individuals with intellectual or developmental disabilities in Spain reported that nearly three-quarters of their sample who were employed before the pandemic experienced interruptions to their work (Amor et al., 2021).

In addition to these psychosocial and employment stressors, previous research has highlighted that there is lack of access to healthcare and support services for individuals with intellectual or developmental disabilities (Hassiotis et al., 2020; Pellicano &

Stears, 2020). Such service gaps in supporting the needs of adults with an intellectual or developmental disability may not only have severe long-term impacts on their ability to be self-reliant and independent but may also add burden on caregivers and society (Asbury et al., 2020; Embregts et al., 2021; Patel et al., 2021; Redquest et al., 2021). Given the protective role that social support plays in mediating psychosocial outcomes for individuals with intellectual or developmental disabilities, there is an urgent call for clinicians and policymakers to provide accessible resources and to develop better support systems to address these gaps. Depending on individual circumstances, careful and thoughtful considerations are warranted in regard to the different type of resources and supports needed for individuals with intellectual or developmental disabilities to mitigate the challenges during public health crises (e.g., COVID-19 pandemic). For instance, those who live in the community may either be ineligible for or have limited access to support services, highlighting that community responses such as voluntary groups and neighbourhood supports may be beneficial for the population. Alternatively, for those who live in assisted living facilities/group homes, a better planned approach for safe visiting and better support for remote communications (e.g., teleconferencing) is needed. Using telehealth services or other novel intervention strategies will help them, and their caregivers, navigate these challenges in such unprecedented times to improve their access to services and reduce disparities for the population (Jeste et al., 2020; Zaagsma et al., 2020).

4.1 | Limitations

There are limitations to this study. First, although native language speakers provided translations, there is the possibility that the survey translation and responses misrepresented a question or statement and may not have accounted for cultural differences or how countries responded to the pandemic socially and politically. Second, proxy respondents may have misrepresented the experiences of individuals with intellectual or developmental disabilities; still it was important to provide them the opportunity to share their experiences. Third, although this was a global study, the majority of respondents lived in the United States, Germany or South Korea. Additional research should examine whether there are differences in living situations and social support networks for individuals living in these different countries and how this could impact outcomes. Fourth, given the self-report nature of the survey, we were not able to verify the participant's diagnosis. Further, it is possible that respondents with an intellectual or developmental disability may not have accurately responded to the psychosocial measures and questions that required use of numerical rating scales. Given the desire to launch a survey quickly, no action was taken to convert the measures into easy read formatting, to pilot the survey, or to consult with adults with intellectual or developmental disabilities. All measures, however, had strong reliability, mitigating these concerns. Finally, the survey was completed online and may have excluded those without access to the internet or those without computer literacy.

4.2 | Implications for practice and research

As the impact of stress and social support on quality of life and mental health is rarely considered in service planning for individuals with intellectual or developmental disabilities, especially in such an unprecedented COVID-19 crisis, this study has important implications for practice and research. As individuals with intellectual or developmental disabilities have lost access to important healthcare and support services during the pandemic (Alexander et al., 2020; Jeste et al., 2020; Lund & Ayers, 2020), practitioners must be aware of the negative impacts of the COVID-19 pandemic on the lives, employment and well-being of individuals with intellectual or developmental disabilities and be prepared to address those impacts properly and timely.

Moreover, individuals with intellectual or developmental disabilities often experience loneliness and depression (McGillivray & McCabe, 2007; McVilly et al., 2006); the isolation experienced during the pandemic may increase risk for serious mental health concerns (Brooks et al., 2020; Hassiotis et al., 2020). The finding that social support mediates the relationship between stress and satisfaction with life during the COVID-19 pandemic is particularly important. Clinicians should capitalise on this finding and work with individuals with intellectual or developmental disabilities to explore ways to expand or strengthen their social support system (Sung et al., 2021). Additionally, given there are different sources (e.g., support from significant other, family, friends, professionals; Zimet et al., 1988) and types of social supports (e.g., instrumental, informational, emotional support and companionship; Vaux et al., 1987), further research should examine if any or all of these dimensions drive the mediation more than the others during the pandemic. Such information will be helpful to inform practitioners regarding which to focus on when working with individuals with intellectual or developmental disabilities to expand their social support system during and beyond the pandemic (Sung et al., 2021). Future research should also account for the culture in which the individual with intellectual or developmental disabilities lives, as social support may be different across continents and countries and may differentially impact outcomes. Indeed, our findings revealed that individuals with intellectual or developmental disabilities in Asia reported significantly lower levels of social support than those in North America or Europe; further research is warranted to examine the underlying reasons and ways to improve social support.

It is also critical to improve and restructure employment services for individuals with intellectual or developmental disabilities. Programs that currently exist to support job finding for individuals with intellectual or developmental disabilities may need to be scaled up after the pandemic. To combat these negative effects, providing comprehensive services and adapting the infrastructure of services (e.g., through telehealth, proactive community outreach) for adults with intellectual or developmental disabilities will be an important component of continuing services (Duan & Zhu, 2020; Zaagsma et al., 2020).

Finally, research should examine the experiences of individuals with intellectual or developmental disabilities during the pandemic over time to determine how they adapt, to identify new concerns that

arise (Schuengel et al., 2020), and to better prepare practitioners to address these issues once restrictions are lifted (Thompson & Nygren, 2020). This would also help determine which services are most helpful and most needed. In particular, research on telehealth services and the best way to provide these services to individuals with intellectual or developmental disabilities is critical (Jeste et al., 2020). As telehealth becomes a common practice, the most effective approach to providing these services to individuals with intellectual or developmental disabilities must be examined.

ACKNOWLEDGEMENTS

The authors are sincerely grateful to Drs. Lianjun J. Chen, Hung Jen Kuo, Cynthia Y. Y. Lai, Claude Normand, and Ingolf Prosetzky for assisting with translations. We are also grateful to all the people who disseminated and participated in the study.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

INFORMED CONSENT

The current study was determined exempt by the Michigan State University Institutional Review Board, study number STUDY00004295. Informed consent was obtained from all individual participants included in the study prior to completing the online questionnaire.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding authors, upon reasonable request.

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How to cite this article: Fisher, M. H., Sung, C., Kammes, R. R., Okyere, C., & Park, J. (2021). Social support as a mediator of stress and life satisfaction for people with intellectual or developmental disabilities during the COVID-19 pandemic. *Journal of Applied Research in Intellectual Disabilities*, 35(1), 243–251. <https://doi.org/10.1111/jar.12943>