



The state of employment in the United States among young adults with cerebral palsy

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ABSTRACT

Young adults with Cerebral Palsy (CP) have lower employment rates compared to young adults in general, as they may be confronted with physical, sensory, and cognitive impairments, coupled with personal and societal barriers as they mature. These challenges are clear, but the solutions are less so. Understanding the factors that impact employment is vital. This study aimed to identify and examine variables related to employment for this population through the lens of the International Classification of Functioning, Disability, and Health (ICF) model. The Rehabilitation Services Administration (RSA-911) federal dataset was used to examine the relationship between functioning and disability within the context of personal and environmental factors as predictors of employment among young adults with CP. Following a descriptive cross-sectional design using a secondary analysis of this national dataset, binomial logistic regression was used to predict employment outcomes. Data representing those with CP who participated in vocational rehabilitation (VR) services and were between 18 and 30 years of age at the time of exit were extracted from the 2019 RSA-911 dataset ($n = 2465$). Just under one-third (30.4%, $n = 750$) emerged as employed, while 69.6% ($n = 1715$) were unemployed at exit from their VR programs in 2019. Significant predictors for employment were participation in career and other support services, having basic skills and literacy, and being of non-Hispanic/Latino ethnicity. These findings concur with the persistent low employment rates for adults with CP and reinforce the need to understand the factors that increase employability. Healthcare professionals are urged to incorporate participation in self-management activities for all transition-aged youth that will not only improve health outcomes but promote future independence and increase awareness of vocational services for this population.

Introduction

The history of disability in the United States is formidable. In the late 1960s, federal policy reforms led to deinstitutionalization and improved fiscal funding focused on community-based living for people with intellectual and developmental disability (IDD). This policy led to increased attention on employment opportunities for all individuals with IDD. On July 26, 1990, the American Disabilities Act (ADA) was signed, safeguarding the rights of individuals with IDD by eradicating barriers to participation in daily living and working in America.^{1,2} The ADA prohibits employer discrimination and embraces all employment-related activities, from opportunities to promotion, wage,

benefits, environmental accommodation, and retention.^{3,4} This outcome is a win in the fight for equality for individuals with IDD who were left without fundamental rights and proper access to their community.

The Workforce Innovation and Opportunity Act of 2014 addressed the need to advance employment outcomes by expanding the types of services to individuals with disabilities transitioning from school to postsecondary education and employment.^{5,6} Despite all, employment rates of adults with IDD remain at only 15% or less,^{7,8} and less than 50% of employers have prior experience in hiring and working with individuals with IDD since the 1960s.^{9–13} Individuals with disabilities remain the leading minority group in the US, representing 20 percent of the population.¹⁴ In 2019, the total number of non-institutionalized

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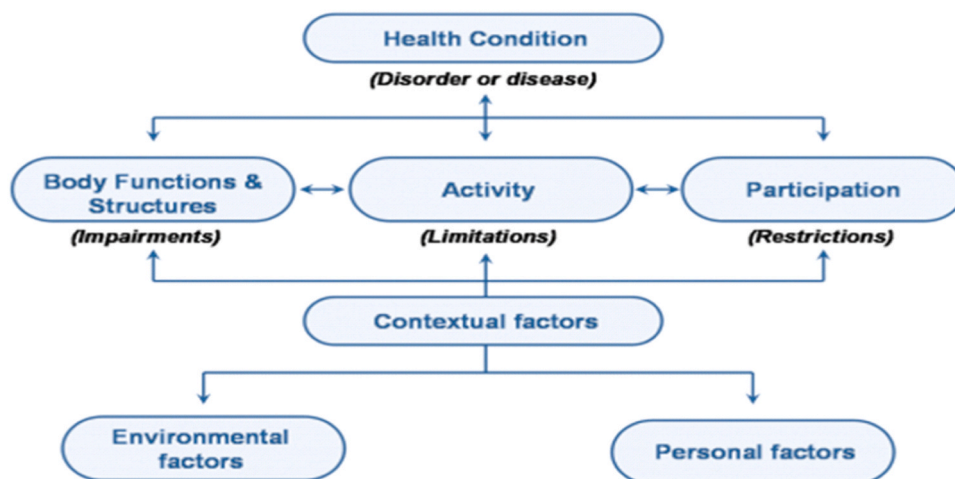
individuals with a disability was 41.1 million, and an estimated 5.5 million of them were between the ages of 18 and 34.¹⁵

This study aims to articulate features that have been key to achieving employment for adults with CP. As such, healthcare professionals may direct interventions incorporating these findings during their interactions with the patients and families. Across the healthcare discipline and society, this research may yield a new understanding for developing strategies and policies that improve the societal participation of individuals with CP.

Cerebral Palsy (CP) is the most common lifelong motor disorder globally that causes physical activity limitations, including the ability to move, balance, and maintain posture ranging from minimal to profound. The prevalence of CP is approximately 1.5–2 per 1000 live births, with about 17 million people affected worldwide.^{16–19} Nearly 75% of individuals with CP are adults.^{20–22} Adults with CP face complex interactions between cognitive delays, physical impairments, activity limitations, participation challenges, and personal and societal barriers that can hinder their employability.^{23–28} Disabilities from CP persist throughout adulthood, thus decreasing employment opportunities,^{23,27,29–31} and perpetuating unemployment may be associated with a lifelong dependence on disability-related government programs.^{32–35}

outcomes of adults with CP who participated in a US-wide vocational program. Vocational Rehabilitation (VR) in the US is funded by the Rehabilitation Services Administration (RSA) and state rehabilitation agencies to deliver services that assist individuals with disabilities in reaching their employment goals. This comprehensive US-wide VR program receives approximately \$3 billion in annual federal funding.^{42,43}

The ICF is a widely recognized biopsychosocial model that presents the impact of a health condition (disorder or disease) on functioning and disability within the context of personal and environmental factors that may minimize or maximize the individual's function.^{44,45} It offers a universal language and framework that illustrates the individual's aspects in life. This is an important model for promoting activity and societal participation among individuals with CP.⁴⁶ Given this, examining the data through the lens of the ICF model informs the relationship between functioning and disability within the context of personal and environmental factors as predictors of employment among young adults with CP. Altogether, the ICF model conveys both a global category of aspects of one's health and function and an outline that generates these ideas together.



Healthcare providers involved in the healthcare transition of CP have a responsibility to acknowledge CP as a lifelong disability without a cure; each patient is an individual who has unique needs to achieve their full potential. The number of adults who are living with CP is increasing, and individuals and families lack the skills to navigate the available healthcare transition services. Inadequate lifespan knowledge and the siloed services in healthcare transition are prevalent.^{36–41} Understanding these core issues and the employment factors can help guide healthcare transition planning for emerging adults with CP. For example, a healthcare professional can engage in transition conversations on employment as soon as social participation is initiated with the patient and family at an early adolescent age. Queries as modest as “What would you want to be when you grow up?” and for parents, “How are you preparing your child to become an adult with CP?” can spark an exploration of their self-advocacy, autonomy skills and the essential knowledge needed to navigate the healthcare system, i.e., vocational rehabilitation services and adult-based specialty services. Additionally, these questions can unravel the individual's contextual factors, i.e., personal and environmental barriers. All considered, the individual's needs are identified, followed by tailored interventions to aid in preparing to achieve employment.

This research used the International Classification of Functioning, Disability, and Health (ICF) model to examine the employment

Illustration of the International Classification of Functioning, Disability, and Health (ICF) Model created by the World Health Organization.⁴⁷

Methods

The study followed a quantitative, cross-sectional, secondary data analysis to identify the predictors of employment for young adults with CP in the US. The data for this study was obtained from the Rehabilitation Service Administration Case Service Report (Form 911), also known as the RSA-911, dataset fiscal year of 2019, encompassing detailed information on all participants' characteristics, vocational rehabilitation services received, barriers to employment, and employment outcomes. This is a sizeable federal dataset of individuals with disabilities who received vocational rehabilitation (VR) services and employment outcomes at exit from the program.

In the US, VR programs are funded by the Rehabilitation Services Administration (RSA) and state rehabilitation agencies that provide career, training, and other support services to aid individuals with disabilities attain their vocational aims. Table 1 presents a list of services offered through the VR program. A participant in a VR program can receive more than one service even after employment. The USC §102(a)

Table 1
Vocational rehabilitation services.

Category of Service	Detailed Services
Training Services	<ul style="list-style-type: none"> • Graduate College or University • Four-Year College or University Training • Junior or Community college Training • Occupational or Vocational Training • On-the-Job Training • Registered Apprenticeship Training • Basic Academic Remedial or Literacy Training • Job Readiness Training • Disability Related Skills Training • Miscellaneous Training • Randolph-Sheppard Entrepreneurial Training • Customized Training
Career Services	<ul style="list-style-type: none"> • Assessment • Diagnosis and Treatment of Impairments • Vocational Rehabilitation Counseling & Guidance • Job Search Assistance • Job Placement Assistance • Short-Term Job Support • Supported Employment Services • Information and Referral Services • Benefits Counseling • Customized Employment Services • Extended Services
Other Support Services	<ul style="list-style-type: none"> • Transportation • Maintenance (monetary support) • Rehabilitation Technology • Personal Assistance Services • Technical Assistance Services • Reader Services • Interpreter Services

Note. From “Reporting Manual for the Case Service Report (RSA-911)” by State Vocational Rehabilitation Services and State Supported Employment Services Programs, June 2017, *Training Service Data Elements*, p. 63–75; *Career Services Data Elements* p. 75–88; *Other Service Data Elements*, p. 88–99. U.S. Department of Education Office of Special Education and Rehabilitative Services Rehabilitation Services Administration. OMB Control Number: 1820–0508.

(1) of the Rehabilitation Act of 1973 governed the VR eligibility criteria that comprised of (1) a physical or intellectual disability resulting in a considerable obstacle to employment; (2) vocational rehabilitation services can enhance employment effect; and (3) vocational rehabilitation services are required to prepare for, acquire a, participate in, or retain paid occupation. In addition to RSA-911 being the Annual Report to the Congress and the President as mandated by sections 13 and 101(a) (10) of the Rehabilitation Act of 1973, the RSA-911 data communicates as appraisal standards as required by sections 106 of the Act; 116 of title I of Workforce Innovation Opportunity Act (WIOA) for principal curricula of the labor force development; 14(a) of the Act for programs authorized under the Act and fiscal soundness; and 107 of the Act for program effectiveness. All these mandates highlight the transition-age youth, ages 14–24, as they represent a greater percentage of all VR participants. The RSA-911 report has bearings on the fiscal forecast, backing, and growth; provides statistics with the Social Security Administration; and extends data to researchers on disability, i.e., received VR services and employment outcomes

Across the US in 2019, n = 4100 participants with CP received VR services with employment outcomes. Only the data representing those with CP, ages 18–30, who participated in the US vocational rehabilitation (VR) program in 2019 with employment outcomes was extracted for this investigation. Excluded were data representing individuals with CP ages younger than 18 and older than age 30.

Descriptive and inferential statistics were computed using IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, version 27.⁴⁸ Descriptive statistics were used to describe the participants’ characteristics, including age, gender, race, Ethnicity, living arrangement, impairments, primary support, medical insurance, education level, barriers to employment, VR services received, and

Table 2
Characteristics.

	Employed (n = 750)		Total Sample (N = 2456)	
	n	%	n	%
Gender				
Male	444	59.2	1392	56.5
Female	306	40.8	1073	43.5
Race				
American Indian/Alaskan Native	5	0.7	27	1.1
Asian	20	2.7	63	2.6
Black	135	18	480	19.5
Hawaiian /Pacific Islander	2	0.3	11	0.4
White	560	74.7	1782	72.3
Mixture of Race	19	2.5	62	2.5
Did Not Self Identify	9	1.2	40	1.6
Ethnicity				
Hispanic/Latino	84	11.2	341	13.8
Living Arrangement				
Private	724	96.5	2342	95
Community	15	2.0	74	3
Other	11	1.5	49	2
Impairment				
Physical	680	90.7	2208	89.6
Sensory	10	1.3	36	1.5
Mental	60	8.0	221	9
Primary Source of Support				
Own Income	66	8.8	139	5.6
Family and Friends	410	54.7	1260	51.1
Public support	248	33.1	981	39.8
Others	26	3.5	77	3.1
Medical Insurance Coverage				
Public	390	52	139	5.6
Private	285	38	1260	51.1
No Medical Insurance	75	10	981	39.8
Highest Educational Level Completed				
Secondary Education	295	39.3	822	33.3
One or More Years of Post-Secondary Education	81	10.8	173	7.0
Certificate or License Post-Secondary Education	9	1.2	16	0.6
Associate degree	21	2.8	36	1.5
Bachelor’s degree	41	5.5	70	2.8
Degree Beyond a bachelor’s degree	12	1.6	14	0.6
No Educational Level completed	291	38.8	861	34.9

employment outcome at exit. Employment as an outcome variable was operationally defined as full-time or part-time employment, self-employment, or supported employment in a competitive integrated employment setting with a customary rate received by similarly employed individuals without disabilities. Binomial logistic regression statistics were conducted to estimate the effect of hypothesized predictor variables on the employment outcome.

Table 3
Barriers to employment for those employed.

	n	%
Low Income	368	49.1
Long term unemployed	276	36.8
Basic Skills deficient/Low level of literacy	184	24.5
English language learner (ELL)	54	7.2
Cultural barriers	39	5.2
Foster Care Youth	36	4.8
Single Parent	12	1.6
Migrant and Seasonal Farmworker	10	1.3
Displaced Homemaker	8	1.1
Ex-Offender	7	0.9
Homeless Individuals, Homeless Children, and Youths, or Runaway Youth	6	0.8
Exhausting TANF (temporary assistance for needy families) within two years	4	0.5

Note: The number of barriers does not equal the sample size due to reports of multiple barriers to participants

Table 4
Vocational rehabilitation services for those employed.

	n	%
Career Services	634	84.5
Other Support Services	233	31.1
Training Services	133	17.7

Note: The number of vocational rehabilitation services does not equal the sample size because a participant can receive multiple services

Results

Data representing those with CP who received VR services and were between 18 and 30 years of age at the time of exit were extracted from the dataset (n = 2465). Just under one-third (30.4 %, n = 750) emerged as employed, while 69.6 % (n = 1715) were unemployed at exit from their VR programs in 2019. Table 2 presents a comparison of their characteristics. Among those employed (n = 750), the majority reported only having a physical impairment (90.7 %, n = 680), a private living arrangement (96.5 %, n = 724), and were of the white race (74.7 %, n = 560). Just over half (59.2 %, n = 444) were male, reported family and friends as their primary source of support (54.7, n = 410), and had public medical insurance coverage (52 %, n = 390). Less than half (39.3 %, n = 295) reported having at least a secondary education. Employment was represented among all ages sampled, with just over 10 % (n = 85) employed at age 23.

Among the employed, the most prominent reported barriers to employment were low income (49.1 %, n = 368), long-term unemployment (36.8 %, n = 276), and basic skills deficient/low level of literacy (24.5 %, n = 184). Table 3 presents the barriers to employment for those who reported being employed. Career services (84.5 %, n = 634) were the most received VR services, followed by other support (31.1 %, n = 233) and training services (17.7 %, n = 133). Table 4 presents the services received by those who reported being employed.

Predictor variables

The logistic regression analysis showed that age at exit and ethnicity were significant among all individual characteristics (Table 5). As the participants mature by age, their employability increases. However, ethnicity had an inverse relationship with employment outcomes. Being Hispanic/Latino resulted in a decreased incidence of employment. Age at exit was associated with an 11.2 % increase in the odds of getting employed, and ethnicity was associated with a 27.3 % decrease. The model containing individual characteristics was $\chi^2(2) = 119.788$, $p < .001$, which denotes a significant improvement in fit relative to a null model.

Additionally, the Hosmer-Lemeshow (H-L) (1997) results in $X^2 =$

Table 5
Binomial logistic regression of individual characteristics for employment.

Predictors	β	SE β	Wald's χ^2	df	p	e β
Constant	-3.855	47.628	0.007	1	0.935	0.021
Age at Exit	0.106	0.014	59.099	1	<0.001	1.112
Ethnicity:	-0.319	0.141	5.133	1	0.023	0.727
Hispanic/Latino						
Test			χ^2	df	p	
Overall model evaluation						
Likelihood Ratio (LR) test			119.788	19	<0.001	
Goodness-of-fit test						
Hosmer & Lemeshow (H-L)			9.544	8	0.299	

$p < 0.05$ was considered significant. All calculation results used four decimal places for statistical accuracy.

Table 6
Binomial logistic regression of barriers to employment.

Predictors	β	SE β	Wald's χ^2	df	p	e β
Constant	-0.274	0.136	4.059	1	0.044	0.761
Basic Skills	-0.636	0.219	8.465	1	0.004	0.529
Deficient/Low Level of Literacy						
Test			χ^2	df	p	
Overall model evaluation						
Likelihood ratio test			21.058	12	0.050	
Goodness-of-fit test						
Hosmer & Lemeshow			7.374	6	0.288	

$p < 0.05$ was considered significant. All calculation results used four decimal places for statistical accuracy.

9.544 and $p = 0.299$ showed no significant differences between observed and expected frequencies across various deciles of probabilities. This non-significant result is a gauge of a rationally well-fitting model.⁴⁹ The model explains only 6.7 % of the variance, an approximation calculated by Nagelkerke R-Square.⁵⁰ The non-significant individual characteristics variables were gender, race, living arrangement, impairment, primary source of support, medical insurance coverage, and highest educational level completed.

Among the barriers to employment variables, basic skills deficiency/low level of literacy was found to be significant, having an inverse relationship with employment outcome (Table 6). This indicates that having a deficiency in basic skills and low literacy decreases employment probability. This was associated with a -47.1 % decrease in the odds of getting employed. The LR of $\chi^2(2) = 21.058$, $p = .050$, evaluated the model's overall appropriateness. The statistic model containing the barriers to employment variables did not significantly improve fit relative to a null model containing no predictor variables. The Hosmer-Lemeshow (1997) results in $X^2 = 7.374$ and $p = .288$ showed no significant differences between observed and expected frequencies across various deciles of probabilities. This non-significant result is a gauge of a rationally well-fitting model. The model explains only 4.8 % of the variance, an approximation calculated by Nagelkerke R-Square.⁵⁰ The non-significant barriers to employment variables were long-term unemployment, exhausting TANF within two years, foster care youth, homeless individuals, homeless children, and youths, or runaway youth, ex-offender, low income, ELL, cultural barriers, single parent, displaced homemaker, migrant, and seasonal farmworker.

The analysis of VR services concluded that career and other support services were significant (Table 7). This indicates that employment increased for participants who received these types of services from the VR program. Career services were associated with a 220 % increase, and

Table 7
Binomial logistic regression of vocational rehabilitation services variables for employment.

Predictors	β	SE β	Wald's χ^2	df	p	e β
Constant	-1.871	0.102	339.621	1	<0.001	0.154
Career Services	1.165	0.115	102.004	1	<0.001	3.206
Other Support Services	0.745	0.110	45.704	1	<0.001	2.107
Test			χ^2	df	p	
Overall model evaluation						
Likelihood ratio test			215.530	3	<0.001	
Goodness-of-fit test						
Hosmer & Lemeshow			10.592	4	.032	

$p < 0.05$ was considered significant. All calculation results used four decimal places for statistical accuracy.

other support services were associated with a 110.7% increase in the odds of getting employed. The LR is $\chi^2(2) = 215.530$, $p < .001$, which are the model's overall appropriateness evaluation results. The statistic model containing the set of VR variables means a significant improvement in fit relative to a null model that did not contain any predictor variables. The Hosmer–Lemeshow (H-L)⁴⁹ results, $X^2 = 10.592$ and $p = .032$, showed no significant differences between observed and expected frequencies across various deciles of probabilities. This non-significant result is a gauge of a rationally well-fitting model. Only 11.8% of the variance is explained by the model, an approximation calculated by Nagelkerke R-Square.⁵⁰ The only non-significant VR service variable was training services.

Discussion

Employment offers financial security and a way to take part in society. When they work, people with disabilities can have opportunities for food security, social belonging, intimacy, personal esteem, purpose, and personal growth.^{51–53} Non-employed individuals with disabilities have the same opinions regarding earnings and job security characteristics as non-disabled equivalents.⁵⁴ Adults with CP prefer to work in an integrated employment setting.⁵⁵ Factors that impact employability and their degree of influence are vital to facilitating the employment of future generations of individuals with CP. If employment predictors still need to be recognized, qualified adults with CP may miss employment opportunities.

To date, a need remains to identify barriers and define successful strategies for hiring qualified individuals with CP. This lack of evidence is likely attributed to the variability of CP's clinical presentation, variety of involved health care providers, non-universal response to currently available treatments, low priority on political agenda, and scarcity of literature on adults with CP compared to the more extensive pediatric research. This study provides preliminary findings on the effect of specific predictor variables on employment within one year before the COVID-19 pandemic.

Application of the ICF model

The ICF model was the framework used to study this phenomenon and examine significant findings to generate ideas about the relationship between identified predictor variables and employment outcomes. The ICF model provides researchers and clinicians with a framework for considering a health condition not in terms of the condition itself but rather in terms of the impact that condition has had on functioning and disability. Body functions and structures, activities, and participation are conceptualized in terms of impairments, limitations, and restrictions caused by the health condition.⁴⁵ Viewing CP through the lens of the ICF model, this study focused on the impact CP has had on the individual's participation in interpersonal and intergroup activities, specifically their participation in employment. Employment as the outcome is situated in the model's concept of participation, which refers to employed individuals with CP. It also explores contextual factors in the environmental and personal spheres that may serve as barriers and facilitators of employment. Within this model, the environmental and personal factors influence functioning and disability. Environmental factors, including the healthcare system, state programs, and government policies, affect the individual. VR services are among these factors. In contrast, personal factors are distinct to the individual (e.g., age, race, gender). Environmental and personal factors may serve as facilitators or barriers to employment.

The VR services, specifically career and other support services, were identified as significant employment predictors, implying that employability increases as more career and other support services are used. Career services provided by the VR program are individualized interventions, such as job coaching, referral services, and placement assistance, associated with a participant's unique needs when seeking

and maintaining employment. Comparably, other support services provide what is needed: monetary backing, technology, personal assistance, and other unique services to sustain a participant in a VR program and to obtain and maintain employment. In this research, counseling on work, income, and disability benefits under career services was provided to participants who were unclear of employment's financial effect on their disability, aids and entitlements, and uninformed of this service. For more than a decade, studies on work income and disability benefits counseling have been associated with increased employment rates among individuals with intellectual and developmental disabilities.^{56–59}

Further, a study on the transition-age VR group of Supplemental Security Income (SSI) benefits recipients who were provided work income and disability benefits counseling service found a significant increase in work activity and job prospects compared to the non-counseled group.⁶⁰ Similarly, an earlier study found improved employability when participants receive job search assistance, job placement assistance, and on-the-job support services among individuals with traumatic brain injury.⁶¹ This study's findings concur with a recent study that demonstrated improved employment outcomes for VR-participant women who were of low income and received TANF (Temporary Aid to Needy Families) and VR maintenance services like food, clothing, and shelter.⁶² Equally, Inge and colleagues⁶³ reported that the most provided VR services associated with employment involved assessment, VR counseling and guidance, job placement assistance, on-the-job supports, and diagnosis and treatment, respectively, in fiscal years 2011, 2012, and 2013.³³ Huang and team³⁴ observed, in fiscal year 2009, a significant association among vocational rehabilitation services, namely on-the-job training, job placement assistance, on-the-job support, maintenance services, and rehabilitation technology with employment. Both studies investigated significant VR services and employment outcomes of adults with CP and used the RSA-911 dataset.

Participants' age at the exit of their VR program and Ethnicity were significant to their employment outcome. Those who were slightly older at the time of their program completion, specifically, participants in their early twenties, were more often employed than their younger counterparts. In contrast to this result, Yin et al.⁴³ identified a younger age group of less than 18 years as more likely to gain employment after receiving varied VR services in Maine.

A disparity exists in participation in VR programs. In 2019, considerably more whites participated than all other races combined, and a reported ethnicity of Hispanic/Latino was associated with decreased employment. While this study cannot answer why such disparity exists, the phenomenon is common. Prior studies have reported a comparable racial gap. White individuals with or without CP showed better employment outcomes among employment data.^{33,60,64,65} Trainor et al.,⁶⁶ found a similar conclusion supporting the lopsided employment outcome among Hispanics/Latinos with disabilities as compared to whites. Moreover, Hispanics/Latinos with disabilities have reported inadequate mode or absence of transportation, language barriers, less education, and adverse attitudes from employers toward employees with disabilities as significant obstacles for them to work.⁶⁷ Whites with disabilities gained employment approximately three times that of all other groups combined (Black, Hispanic/Latino, Asian, Hawaiian/Pacific Islander, and Alaska Native).

Unlike the labor market's workforce in 2019, few among this study's employed group reported post-secondary education or beyond. Being deficient in basic skills and having low literacy levels were significant predictors of employment. As reports of deficiency in basic skills and low literacy (academic skills at or less than eighth-grade level) increased, there was an associated decrease in the odds of getting employed. Future studies may explore the factors associated with achieving an education, given the available assistance and services the VR program covers.

To address these significant barriers, a similar investigation on job placement and work barriers showed significant for Latino people with disabilities and worse when one is an ex-convict.⁶⁸ Further, VR participants with lesser affinity with the US culture, particularly English

language learners and those with low educational attainment, grappled more with job placement than groups with greater affinity with the US culture.⁶⁹

Limitations

Given the lack of a United States CP registry and surveillance, studies on employment outcomes among individuals with disabilities were not specific to CP but, at best, inclusive of them. Therefore, the study used the RSA-911 dataset for its accessibility and reliability. However, using a secondary dataset, like RSA-911, can potentiate misgivings regarding data's intentions or quality control despite being a federally mandated database by state VR agencies with an internal system to guarantee accuracy and validity.

Additionally, the study's results were quantitative only, deprived of qualitative data that could have further informed each predictor variable or provided insight into what employment means to a young adult with CP. A central weak point for the significant findings' generalizability was that not all individuals with CP in every state were included in the dataset. The RSA-911 dataset lacks information among the VR-eligible participants from private institutions, including education and healthcare systems, who did not rely on state vocational rehabilitation funding. Further, the heterogeneity of CP presentation intensified by the personal characteristics and the environment makes the generalizability of this study difficult.

Impact of a pandemic era

A new category emerged where employees can work with an intense online dependence when performing tasks during the COVID-19 pandemic. For example, an employee can work from home, remotely, or hybrid, i.e., a combination of work at home and office of varying proportions. During this period, the news captured the Black Lives Matter (BLM) movement, bringing enduring changes across the US labor market.⁷⁰ This led to an increased awareness of being different compared to the predominant race, or physical attributes do not mean limited opportunities. Since then, diversity, equity, and inclusion have been a priority in the labor market, including academic, film, and finance industries homogeneously dominated by white males in leadership positions. Further, the current labor scarcities intensified a paradigm shift among employers to adjust their attitudes and practices for talent acquisition and retention, including expanding job opportunities for individuals with disabilities.^{71,72}

In the early pandemic, an increased unemployment rate occurred in non-telework jobs.⁷³ Similarly, a significant increase in the unemployment rate was reported among individuals with and without disabilities from February 2020 to April 2020.⁷⁴ Conversely, individuals with disabilities who graduated from college had recovered and exceeded pre-COVID-19 employment rates by the end of 2020.⁷⁵

The results of the COVID-19 pandemic analysis are encouraging, particularly the use of disability-related employment processes, i.e., aiming for more consideration of accommodation practices and developing more use of remote work, flexible work schedules, and job sharing.⁷⁶ Moreover, individuals with disabilities are disproportionately benefiting from the quick recovery from the preliminary trade and industry contraction.⁷⁷ These early findings positively impact the persistent employment disparities, equity, and inclusion among individuals with disabilities.

Implications

To support the aim of this study, care for all individuals, with or without chronic medical conditions or CP, demands to incorporate every chance for participation in daily activities and the society that will promote self-management and independence. More importantly, a mandate on education at all levels of healthcare professions regarding

pediatric-onset disability as a lifetime condition. For instance, lifespan care of CP education is crucial for training future healthcare professionals encompassing public health, medicine, nursing, rehabilitation, mental health, pharmacy, and social work disciplines. In clinical practice, the CP specialists aim to partner with other healthcare teams and inform non-healthcare academics, community programs, business sectors, and lawmakers to create opportunities to uplift the individual's function and capabilities to self-manage and become independent in society.^{78,79} Healthcare professionals can fortify relationships with local community projects driven by creating viable employment models that groom individuals with IDD early in high school⁸⁰ and stay abreast of government funding opportunities and their limitations.⁸¹⁻⁸³ As a potential result, emerging adults with IDD can have job prospects in the community before graduation.

The future advancement and sustainability of policies on employment among CP or disability population depend on rigorous research and collaboration through a wide-ranging discipline such as economics, healthcare, business, architecture, and public and population health, to name a few. Research must be rooted in humanization to eradicate factors or policies that restrict employment opportunities among individuals with CP or any disability.

Conclusion

The study results concur with the persistent dismal low employment rate among young adults with CP and the demand to understand employment predictors to facilitate the full potential of future generations of all individuals with CP. Healthcare providers are strategically positioned to direct outcomes, reduce disparity, and advance equity. To achieve this, delivering care that incorporates participation in daily activities and society and increases awareness of this pediatric-onset disability as a lifetime condition is fundamental.

CRedit authorship contribution statement

Dawn DiStefano: Writing – review & editing, Supervision, Conceptualization. **Patricia Eckardt:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis. **Jennifer Emilie Mannino:** Writing – review & editing, Writing – original draft, Supervision, Conceptualization. **Eduardo del Rosario:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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Ethical statement

This paper is the author's and coauthors' own original work and reflects their own review and analysis in a truthful and complete manner. All authors have been substantially involved in the work leading to the creation of this paper and take responsibility for the content.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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