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Contributions of Community Organizations to Personal Outcomes for People with Intellectual and Developmental Disabilities: A Study of Special Olympics Program Participation

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Plain Language Summary

Community organizations and disability service providers can help people with intellectual and developmental disabilities (I/DD) live good lives. In this study, researchers added a question about being a Special Olympics athlete into a survey given to many people with I/DD. They wanted to know why people participate in Special Olympics. They also wanted to know if Special Olympics athletes had better outcomes than others. There were two main findings. First, Special Olympics athletes were often younger than others and they typically moved around without aid. Second, Special Olympics athletes often got more exercise than others. They also had more paid community jobs. People with disabilities can benefit when community organizations and providers work together.

Abstract

Community organizations can enhance the intellectual and developmental disability (I/DD) service system's ability to improve the health, wellness, and participation of people with I/DD. This study added an item about Special Olympics (SO) participation to the 2019-2020 National Core Indicators In-Person Survey to predict active SO participation and to determine whether personal outcomes differed for SO participants. Results of a multinomial logistic regression showed that people who were younger or who did not require mobility aids were more likely to participate in SO. Compared with people who never or formerly participated in SO, current SO athletes had better personal outcomes. Results provide evidence that alignment between service agencies and community organizations may benefit personal outcomes for people with I/DD.

Introduction

Many community organizations, service agencies, and other providers constitute the intellectual and developmental disability (I/DD) service system. Each of these groups contribute

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to health and wellness across the lifespan for people with I/DD and collectively influence community participation and other personal outcomes. State developmental disability service agencies develop administrative practices, processes, and services to promote positive personal outcomes for people with I/DD. Community organizations implement policies at the ground level to facilitate people's engagement in their community. Federal regulations have also had a significant influence on opportunities for people with I/DD. For example, the Medicaid Home and Community-Based Services (HCBS) Final Rule (CMS 2249-F/2296-F) requires state agencies to employ strategies that ensure people with I/DD experience dignity, have access to the greater community, and are given opportunities to make life choices.

Aligning the goals and activities of organizations and agencies that support people with I/DD can help reduce barriers that isolate people, exclude them from opportunities, and prevent positive personal outcomes. For example, interagency coordination between Developmental Disabilities (DD), Vocational Rehabilitation, and Medicaid agencies is an evidence-based predictor of improved postschool outcomes for people with disabilities (Rowe et al., 2015). Schalock and Verdugo (2012) proposed that by aligning values, resources, and strategies, DD agencies and community organizations can more effectively and efficiently achieve personal outcomes for people with I/DD. Evidence for this idea has been supported over recent years.

The California Employment Consortium for Youth with I/DD (CECY) relied on collaboration between agencies and organizations, among other stakeholders, to develop policies and capacities that would increase likelihood of community employment for youth with I/DD (Raynor et al., 2017). Religious organizations that collaborate with state agencies have been found to improve opportunities for people with I/DD who live in rural regions by providing wide ranging resources along with social and employment supports (Carter et al., 2017; Stewart-Ginsburg & Kwiatek, 2020). Agency and organization alignment can also support improved health outcomes for people with I/DD. For example, when comparing Colorado's Cross-Systems Care Integration—a collaboration between agencies, healthcare providers, and community support—with other models, it was found that there was less weight gain and fewer cases of high blood pressure and hyperlipidemia among adults with I/DD (Wilson et al., 2020).

Special Olympics (SO), an international organization with a presence in all 50 states and over 200 countries and jurisdictions (Special Olympics, 2018), has sought to improve health, wellness, social participation, and leadership among people with I/DD since the late 1960s. Current initiatives include providing health screenings to prevent disease progression and to improve health. Studies show that SO fitness models and programs reduce weight and blood pressure, especially for people with I/DD who are at greatest risk for poor health outcomes (Rubinstein et al., 2020). Health profile scores consisting of body mass index (BMI), blood pressure, fitness test results, and physical activity, have been found to be better for people with I/DD who participate in SO compared to those who do not (Walsh et al., 2018). A systematic review indicated that participation in SO activities most often resulted in improved social skills and expanded social networks, rather than changes in physical or psychological health (Tint et al., 2017).

It is less understood how participation in SO contributes to personal outcomes for people with I/DD. To examine this, we used Virginia's data to explore two research questions. First, among users of Medicaid I/DD home- and community-based services, what factors predict current SO participation? Second, compared with people who formerly participated in SO or never participated in SO, do current SO participants experience different levels of personal outcomes, including health, community and social participation, and paid community employment?

Methods

All methods described in the following section were reviewed and approved by the Virginia Commonwealth University's Institutional Review Board.

Data Source

This study used Virginia's data from the 2019-2020 National Core Indicators In-Person Survey (NCI-IPS). The NCI-IPS is a nationally validated survey that is used to assess quality and outcomes associated with Medicaid I/DD HCBS waiver services and, as of 2021, is administered in 46 states and the District of Columbia. The NCI-IPS is comprised of three parts: (1) Background section, (2) Part I, and (3) Part II. The background section of the NCI-IPS is completed by a case manager or support coordinator and contains personal data about a person's health status. The remainder of the NCI-IPS is completed as a direct, in-person interview with the person with I/DD who uses at least one public I/DD service in addition to case management. Part I of the in-person survey requires a direct response from the person with I/DD and in Part II proxy responses are allowed. The NCI-IPS has been identified as an administrative dataset that can be used to monitor predictors of health and wellness for people with I/DD (Fox et al., 2015). All three parts of the NCI-IPS have been used together with other tools to develop an understanding of the intersection of I/DD and health.

Variables

Special Olympics Participation

Each year, states participating in the NCI project have the opportunity to add a limited number of items to the NCI-IPS. In collaboration with SO, a request was made to the Virginia's DD agency to add, "Have you participated in Special Olympics in the past year?" Response options were: (a) No, I have never participated/I was never a Special Olympics Athlete; (b) No, but I participated in the past/I was a Special Olympics Athlete; (c) Yes; or (d) Don't know.

Personal Characteristics

Personal characteristics were similar to those selected by Robinson et al. (2018) to predict frequency participation in SO. Variables included age, gender, race, BMI, and mobility (moves independently without aids; moves independently with aids; non-ambulatory). People who

reported needing “some” or “extensive” supports to manage self-injurious, disruptive, or destructive behaviors were categorized as requiring behavioral supports. The last personal characteristic used was health conditions. The NCI-IPS asks whether individuals have the presence of 10 different health conditions, including diabetes, high cholesterol, high blood pressure, etc. By summing health conditions, we created a total health conditions score (range: 0-10).

Physical Health

NCI-IPS also includes measures for subjective health and frequency of physical activity. The person/proxy described health using a subjective scale (1 = poor to 4 = excellent). Physical activity was described as moderate exercise of 10 minutes or longer. Examples included dancing, biking, swimming, among others. Responses were provided using a frequency scale (range: 1 = no physical activity in a week to 4 = five or more times per week).

Community and Social Participation

Similar to the physical activity item, the NCI-IPS assesses community participation through frequency of participation in activities such as entertainment in the community or eating out at restaurants and coffee shops (1 = 0 times in the previous month; 4 = 5+ times in the previous month). Community participation is similar to integration or sharing community spaces, but other items capture social components of community inclusion such as participating as a member of a community group (1 = no; 2 = yes), having a best friend (1 = no; 2 = yes) or expanded friendship. Giordano et al. (2016) described limited friendship as only having relationships with family and paid support staff while expanded friendships included those beyond family and staff, such as other people within their community. The associated NCI item for this concept is “Do you have friends you like to talk or do things with?” (1 = no; 2 = yes, all friends are staff or family; 3 = yes, has friends who are not staff or family).

Community Employment

Community employment combined those who had paid employment in a community-based setting and either worked independently or as part of a small group in an integrated setting. Response options were binary (1 = no, 2 = yes).

Participants

The current sample consists of 512 adults with I/DD who received Medicaid home- and community-based I/DD waiver services in Virginia and were interviewed between October 2019 and March 2020. The average age was 43 years ($SD = 15.29$; range = 18-85 years). Participants averaged slightly more than one health condition per person ($M = 1.31$; $SD = 1.27$). The average BMI was 28.23 ($SD = 7.41$), which is considered by the Centers for Disease Control and Prevention (CDC) as “overweight.” Thirty-eight percent of the sample was “overweight” and 30% were in the “normal” BMI category (CDC, 2018). Other sample characteristics are shown in Table 1.

Table 1*Personal Characteristics (N = 512)*

Variables	<i>n</i>	%
Gender		
Female	224	43.8
Male	288	56.3
Race		
Black/African American	175	34.2
White	313	61.1
Level of ID		
Mild	154	30.1
Moderate	177	34.6
Severe	77	15.1
Profound	47	9.2
Mobility		
Ambulatory without aids	339	66.9
Ambulatory with aids	104	20.5
Non-ambulatory	64	12.6
Paid Community Employment (yes)		
	61	12.0
Special Olympics Participation		
Never	208	40.6
Past	184	35.9
Active/present	94	18.4
Subjective Health		
Poor	16	3.2
Fairly good	167	32.9
Very good	233	46.0
Excellent	91	17.9
Moderate physical activity		
None	143	28.4
1-2 times per week	102	20.2
3-4 times per week	97	19.2
5+ times per week	162	32.1
Health Conditions		
Diabetes (yes)	73	14.5
High cholesterol (yes)	95	18.9
High blood pressure (yes)	105	20.8

Analysis

Data analysis was carried out in two phases aligning with the research questions. In the first phase, SO participation was divided into three mutually exclusive categories. We used previously examined predictor variables (Robinson et al., 2018) to evaluate the probability of either being a current SO athlete, a former SO athlete, or having never participated in SO. We used a multinomial logistic regression to address research question 1.

We used multinomial logistic regression for this analysis. Multiple categorical outcomes were introduced into the model including whether participants had currently, formerly, or never participated in SO. Our model also included age, gender, race, mobility, behavioral supports, and health conditions. We used many predictors considered by Robinson et al. (2018) while adding additional personal characteristics.

The second phase of the analysis used two types of bivariate analyses to explore relationships between active SO participation and personal outcomes for health, community and social participation, and community employment. In the past, results of SO participation on these types of personal outcomes have varied; therefore, the bivariate analyses examined whether relationships between observed variables can be used to inform more complex, multivariate analyses in future studies.

The first analysis, Pearson chi-square test of independence, examined associations between SO group membership (current, former, never) and categorical outcomes, including the dichotomous variables (no, yes) for health conditions such as high blood pressure, high cholesterol, and diabetes. Other personal outcomes included those related to community participation (i.e., social relationships and paid community employment). For significant results, effect size was reported with Cramer's V and interpreted using Cohen's (1988) guidelines for 2 degrees of freedom (small $< .07$, medium $> .21$, strong $> .35$). When overall tests were significant, we examined and squared standardized residuals converting them into the chi-square statistic. A Bonferonni correction was made for p values because there were six concurrent chi-square tests performed, making the new alpha cut-off $.0083$ ($.05/6$).

The second set of bivariate analysis used one-way ANOVAs to explore associations between SO participation (current, former, never) and personal outcome variables that were interval level data, including frequency of participation in community entertainment and eating-out activities, as well as two personal health outcomes: (1) subjective ratings of personal health and (2) frequency of physical activity. Effect size was reported through eta-squared, which accounted for variance by the main effects (small $< .01$; medium $> .06$; large $> .16$; Cohen, 1988). When F was significant, we used the Games-Howell test, which does not assume homogeneity of variances or equal sample sizes, to examine pairwise comparisons between those who never, formerly, or currently participated in SO.

Results

Factors that Predict Special Olympics Participation

To explore the relationship between personal characteristics and membership in three possible outcome groups (current participation in SO, former participation in SO, never participated in SO), a multinomial logistic regression was performed. The regression model that contained all predictors, compared to a model with only the intercept, significantly improved fit to the data, $\chi^2(18) = 40.17$, Nagelkerke $R^2 = .11$, $p < .01$. Mobility, $\chi^2(4) = 13.95$, $p < .01$, and BMI, $\chi^2(2) = 46.87$, $p < .05$, were two predictors that significantly contributed to the overall fit of

the model.

Table 2 includes the individual parameter estimates. Current SO participation was specified as the reference category. The upper half of Table 2 compares the odds of current SO participation to never participating in SO and the bottom half of the table compares active SO with former SO participation. Results show that age and mobility were significant predictors of never participating in SO. The odds of never participating in SO increased by 2.5% for every year of age. Younger participants were more likely to be current participants in SO. Mobility was also a significant predictor. The reference mobility category was “non-ambulatory,” referring to participants who required full support for mobility. People who required full support for mobility were significantly more likely to have never participated in SO than those who are independently mobile; their odds of never participating in SO were over five times higher (1/.19) than for people who do not require aids for mobility.

Table 2

Multinomial Logistic Regression Analysis Showing Association Between Predictors and Special Olympics Participation

Predictor	<i>b</i>	<i>SE</i>	95% CI for odds ratio		
			Lower	Odds ratio	Upper
No SO vs. Current SO					
Intercept	1.85	1.33			
BMI	-.02	.02	0.94	0.98	1.02
Age	.02	.02*	1.00	1.03	1.05
Sum health conditions	-.23	.13	0.62	0.8	1.03
Behavioral support	.06	.33	0.55	1.06	2.02
Mobility (no supports)	-1.64	.7*	0.04	0.19	0.91
Mobility (supports)	-.68	.0	0.09	0.51	2.99
Race_Black	.46	.6	0.40	1.56	6.04
Race_White	.48	.68	0.43	1.62	6.10
Sex	-.45	.33	0.34	0.64	1.21
Past SO vs Current SO					
Intercept	1.60	1.41			
BMI	.03	.02	0.98	1.02	1.07
Age	.02	.01	1.00	1.02	1.05
Sum health conditions	-.20	.13	0.63	0.82	1.05
Behavioral support	.02	.33	0.53	1.02	1.97
Mobility (no supports)	-1.52	.81	0.04	0.22	1.07
Mobility (supports)	-.10	.2	0.15	0.91	5.51
Race_Black	.6	.82	0.08	0.39	1.95
Race_White	-1.00	.82	0.07	0.37	1.82
Sex	-.13	.33	0.46	0.88	1.68

Note. $R^2 = .11$ (Cox-Snell), $.13$ (Nagelkerke). Model $\chi^2 (18) = 40.17, p < .01$. * $p < .05$.

None of the predictors significantly improved the odds of being a former participation instead of being a current participation. However, there were two borderline results that were

similar to those found when comparing SO participation versus never participating. Although slightly beyond the .05 criteria for significance, the results indicated that former SO participants are older and that those with no mobility challenges have greater odds of current SO participation. Most of the variables in the model (e.g., BMI, health conditions, race, and sex), were not significant predictors of participation (current, former, never) in SO.

Differences in Outcomes by SO participation

Differences in health, community and social participation, and employment based on participation in SO are provided in Table 3. For categorical outcomes, we used Pearson chi-square tests and for continuous data we used one-way ANOVAs. Associations were not detected between groups and several outcome variables, including rates of high blood pressure, high cholesterol, diabetes, going to restaurants or coffee shops in the community, expanded friendships, and having a best friend.

Chi-square tests indicated an association between SO participation and participation in community groups and community-based employment. Cramer's *V* indicated a moderate value for both findings, .25 for participation in community groups and .22 for paid community-based employment. Analysis of residuals showed that rates of participation in community groups were significantly higher among those who currently participated in SO ($\chi^2(1) = 24.51, p < .0083$) and significantly lower for those who had never participated in SO ($\chi^2(1) = 16.03, p < .0083$). Rates of paid community-based employment were significantly higher for current SO participants ($\chi^2(1) = 22.28, p < .0083$) compared with former participants and those who had never participated in SO. Former SO participants were significantly less likely to be employed than active participants, but the result was slightly greater than the new alpha cut-off established with the Bonferroni correction ($\chi^2(1) = 6.86, p = .0088$).

Three different one-way ANOVAs showed a significant effect of SO participation on physical activity, subjective health rating, and participating in entertainment activities in the community (Table 3). The effects, eta-squared, were small for each of these findings. Post hoc comparisons using the Games-Howell test indicated that former SO participants had significantly less physical activity and significantly poorer subjective health ratings compared with current SO participants. Although the omnibus test indicated differences in the frequency of participation in entertainment activities, pairwise comparisons did not significantly differ.

Discussion

This study examined what factors predict current SO participation and how participation in SO contributed to personal outcomes for people with I/DD. We used a highly regarded administrative data set (the NCI-IPS) for our analysis. Results show the potential of SO, like other community agencies and organizations, to impact the health and community participation for those who use Medicaid HCBS waiver services.

Table 3
Outcome Comparisons Between Special Olympics Participation Groups

Outcome variables	Groups									Games-Howell (mean difference)						
	No Special Olympics			Past Special Olympics			Special Olympics			F	df/ χ^2	η^2 / Cramer's V	No vs Past	No vs SO	Past vs SO	
	%	M	SD	%	M	SD	%	M	SD							
Health																
High Blood Pressure (% yes)	20			21			19			0.15						
High Cholesterol (% yes)	19			19			20			0.04						
Diabetes (% yes)	11			19			13			5.44						
Physical Activity		2.56	1.23		2.42	1.20		2.84	1.21	5.53*	2,478	0.02	.14	-.28	-.42*	
Subjective Health		2.78	.73		2.73	.76		2.98	.86	3.42*	2,480	0.01	.05	-.20	-.25*	
Community & Social Participation																
Entertainment		2.25	1.09		2.23	1.01		2.54	.99	3.11*	2,479	0.01	.02	-.29	-.30	
Eat out		2.83	1.13		2.85	1.07		3.12	.91	2.60	2,481	0.01				
Community group (% yes)	25***			35			57***			28.92***		0.25				
Expanded friendship	85			86			91			3.22						
Best friend (% yes)	78			78			90			5.02						
Employment																
Paid community job (% yes)	11			8			28***			23.08***		0.22	1.35			

Note. $R^2 = .11$ (Cox-Snell), $.13$ (Nagelkerke). Model $\chi^2(18) = 40.17, p < .01$.

* $p < .05$

*** $p < .001$

Our first research question examined the factors that predict program participation in SO. When looking at HCBS waiver participation, Harrington and Kang (2016) found that people with I/DD from historically marginalized racial and ethnic groups were less likely to access Medicaid waiver support than their White peers. Regarding SO program participation, SO athletes have been shown to be younger, mostly White, and more mobile than those not accessing SO (Ausderau et al., 2019). In our study, a relationship between current SO participation and age and mobility was established, but we did not find race or sex to be predictive. Our results support Vancampfort et al.'s (2022) systematic review findings that older adults with less mobility had lower levels of physical activity when compared to their peers. We found that older adults were less likely to participate in SO, which is consistent with Crawford et al.'s (2015), who found that SO athletes were significantly younger than people who did not participate in any sports programs. Finally, our results related to personal characteristics were similar to Robinson's (2018) in that behavior support needs and health conditions were not predictive of SO participation. More than half of the sample had, at some point in their lives, participated in SO and the fact that their participation was neither contingent nor disproportionate based upon sex, race, health conditions, or behavior is a significant finding.

In our analysis, health outcomes related to SO participation were mixed, which is a consistent finding in previous literature (see Crawford et al., 2015; Tint et al., 2017). People with I/DD, including current and former SO participants and those who had never participated in SO, had statistically equal rates of high blood pressure, high cholesterol, and diabetes. Current SO participants reported better health and more rigorous physical activity, the latter being a particularly important finding given that people with I/DD typically have less than half the amount of physical activity reported by people without disabilities (Stancliffe & Anderson, 2017). This suggests that participating in SO may provide more opportunities for physical activity or may motivate SO participants to engage in physical activity regularly. When examining about 100 SO athletes and 50 people with I/DD who did not participate in SO, Walsh et al. (2018) also found that active SO participants reported more rigorous physical activity and had better overall health.

Relationships between physical activity and community participation have been previously reported (Hsieh et al., 2015; Stancliffe & Anderson, 2017). Our results reinforced these finding by illustrating that current SO involvement improved physical activity and certain types of community participation, such as involvement in community organizations and entertainment activities in the community. The community organizations item did not specify which or how many community organizations respondents participated in, including SO.

Community and social participation are different constructs that are too often conflated. Community participation is related to having access to and physical integration in community activities or facilities. Community access and integration are necessary steps for social participation across various contexts (O'Brien & Blessing, 2011). Tint et al. (2017) found SO participation to be related to community participation, but most often SO supported social skill development and social participation, which is more related to interacting with others and forming relationships (Chang & Coster, 2014). The development of social skills, adherence to training regiments, and reductions in maladaptive behaviors (Özer et al., 2012) are previously

reported gains associated with SO that could lead to more opportunities for community participation, including paid community employment as reported in this study. SO athletes from five different countries reported that SO was directly related to employment opportunities because it built social capital and created connections with employers through expanded social networks (McConkey et al., 2013). While we found that current SO participants had higher rates of community employment, we, like Crawford et al. (2015) failed to detect differences in the composition of social networks (i.e., expanded friendships) or improved likelihood for having a best friend.

Overall, the examination of the selected outcomes in this study related to health, community and social participation, and paid community employment, indicated that SO participation supports I/DD system efforts to improve the lives of people with I/DD. This suggests that community organizations can help I/DD providers and service agencies improve outcomes for people with disabilities. I/DD system providers and agencies should make intentional efforts to connect with community organizations, such as SO, to provide opportunities for people to participate in activities that could lead to greater health outcomes, community participation, and other positive impacts on personal outcomes. In addition, if personal outcomes are included in a person's individualized service plan (ISP) or within organizational objectives or performance benchmarks, participation in community organizations such as SO, may help people and providers achieve desired goals.

Limitations and Future Research

Though results from the current study were promising, they were not without limitations. First, while we were able to assess whether or not people participated in SO, the type and degree of participation was unknown. Highly active and less active SO athletes may be relatively distinct groups (Robinson et al., 2018). Psychological, social, and physiological outcomes related to SO improve as SO involvement increases, such as attendance in more sessions or more years of SO participation (Crawford et al., 2015; Marks et al., 2010; Weiss & Bebko, 2008). This information was unavailable in the NCI-IPS dataset.

Data used for this study were collected in 2019-2020. In a typical year, Virginia collects NCI-IPS data from over 800 participants. Data collection ended in March 2020 in accordance with shutdown guidelines during the emerging COVID-19 public health crisis. The resulting dataset was larger than most used in other SO studies, but smaller than what had been previously collected ($N = 512$). Recruitment for participation in the NCI-IPS is completed via phone, which has its own set of limitations. For example, phone numbers are sometimes incorrect, potential participants do not answer phone calls from unknown numbers, and numerous call attempts are left unanswered. Additionally, participation in NCI-IPS in Virginia is voluntary, unlike in other states where it is required in quality assurance initiatives linked to the receipt of Medicaid Home- and Community-Based waiver services.

Two key findings of this study were that mobility support needs were related to current SO participation and that SO participation was related to physical activity. However, Stancliffe

and Anderson (2017), using NCI-IPS data from multiple states, reported that mobility supports were related to people with I/DD achieving recommended amounts of physical activity. Future research should further disambiguate SO's role in the relationship between mobility and physical activity outcomes.

Conclusion

State I/DD systems recognize that community organizations outside of formal service systems influence people's lives and outcomes, but these factors are not routinely measured. Incorporating items about personal outcome influencers (i.e., SO, churches, social groups) into existing systematic data collection efforts such as the NCI-IPS, can provide actionable data to evaluate the impact of these programs on outcomes for people with I/DD. This data can also provide an evidence base to inform policy, practice, and service planning.

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