

Virtual Nutrition, Socialization and Stress Reduction Intervention for Adults with Disabilities: A Feasibility Study

Leslie Spencer^{1*}, Kristin J. August², Dara Lyn LoBuono¹, Joan Perks³ and Megan Mason²

¹Department of Health and Exercise Science, Salva School of Nursing and Health Professions, Rowan University, Glassboro, New Jersey, United States of America

²Department of Psychology and Health Sciences Center, Rutgers University, Camden, United States of America

³Department of Health Sciences, Stockton University, Galloway, New Jersey, United States of America

Participant Survey Item Topics	Caregiver Survey Item Topics
<p>Nutrition Knowledge, Attitudes and Behaviors Scale items</p> <ul style="list-style-type: none"> Daily consumption of Fruit, Vegetables, Fast food, Water, Sweetened beverages (5 items) Type of milk consumed (percentage fat, milk alternatives) (1 item) Confidence in changing eating habits (1 item) Knowledge of nutritional quality of foods (7 items) 	<p>Nutrition Knowledge, Attitudes and Behaviors Scale items Caregivers responded to the same questions for both themselves and to describe the PwIDD. Additionally, they responded to the following:</p> <p>Adapted Cooking Matters Adult Survey</p> <ul style="list-style-type: none"> Healthy food choices (6 items) Cooking confidence (6 items, T1 $\alpha=0.67$; T2 $\alpha=0.66$) Cooking barriers (3 items, T1 $\alpha=0.87$; T2 $\alpha=0.66$) Food Resource Management (3 items, T1 $\alpha=0.50$; T2 $\alpha=0.68$)
<p>Adapted Items from the Pittsburgh Sleep Quality Scale (2 items)</p> <ul style="list-style-type: none"> Hours of sleep Perceptions of overall sleep quality 	<p>Adapted Items from the Pittsburgh Sleep Quality (2 items)</p> <p>Caregivers responded to the same questions to describe the PwIDD</p>
<p>UCLA Loneliness Scale (3 items, T1 $\alpha=0.90$; T2 $\alpha=0.85$)</p> <ul style="list-style-type: none"> Lack of friends Lack of social activities Feel alone while with others 	<p>UCLA Loneliness Scale items (3 items, T1 $\alpha=0.64$; T2 $\alpha=0.72$)</p> <p>Caregivers responded to the same questions to describe the PwIDD</p>
<p>Kessler Psychological Distress Scale (10 items, T1 $\alpha=0.90$; T2 $\alpha=0.87$)</p> <ul style="list-style-type: none"> Fatigue Nervousness (2 items) Hopelessness Restlessness (2 items) Depression (3 items) Worthlessness 	<p>Kessler Psychological Distress Scale items (10 items, T1 $\alpha=0.76$; T2 $\alpha=0.88$)</p> <p>Caregivers responded to the same questions to describe the PwIDD</p>
<p>Adapted Items from the Perceived Stress and Coping Scale (2 items)</p> <ul style="list-style-type: none"> Perceived stress Coping confidence 	<p>Adapted Items from the Perceived Stress and Coping Scale (2 items)</p> <p>Caregiver responded to the same questions to describe the PwIDD</p>

Table S1: PwIDD and caregiver survey content (with reliability coefficients for existing measures when available).

***Corresponding author:** Leslie Spencer, Department of Health and Exercise Science, Salva School of Nursing and Health Professions, Rowan University, Glassboro, New Jersey, United States of America, E-mail: spencer@rowan.edu

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Questions Related to Overall Experience:

Thinking about all 8 sessions, did you enjoy your participation in the Snack, Chat, and Chill program

- Overall Agreement that Program was Enjoyable (n=16 PwIDD, n=1 CG*)

What did you like best about the [Snack, Chat and Chill] program? A specific nutrition activity you liked best? A specific recipe you liked best? A specific chill activity you liked best?

- Making or eating the food (n=15 PwIDD, n=1 CG*)
- Information provided in the program (n=3 PwIDD, n=3 CG*)
- Nutrition and chill activities (n=2 PwIDD, n=2 CG*)
- Social aspect of program (n=3 PwIDD)
- Student instructors (n=1 PwIDD)

What did you like least about the program? A specific nutrition activity you liked least? A specific recipe you liked least? A specific chill activity you liked least?

- Chill activities (n=4 PwIDD)
- Food /specific recipes created (n=2 PwIDD)
- Length of program (n=1 PwIDD, n=1 CG)
- There was nothing I liked the least (n=2 PwIDD)
- Repetition of some activities (n=1 PwIDD)

Is there anything you recommend that we change about the program?

- Overall program and logistics (n=14 PwIDD, n=3 CG)
- Nutrition and snack-related changes (n=9 PwIDD, n=2 CG)
- Chill activities (n=2 PwIDD)

Questions Related to Socialization:

To what degree do you feel you were able to socialize with other group members?

- Enjoyed the socialization (n=8 PwIDD, n=1 CG*)
- Neutral about the ability to socialize (n=3 PwIDD)
- Did not enjoy socialization offered in the program (n=2 PwIDD)

Did you enjoy interacting with other participants during program sessions?

- Enjoyed interaction (n=15 PwIDD, n=2 CG)
- Enjoyed seeing familiar faces (n=1 CG)

Did you have fun during program sessions?

- Had fun (n=17 PwIDD)
- Neutral (n=2 PwIDD)
- Liked having a routine (n=1 PwIDD)

Did you feel like you had a chance to speak during program sessions?

- Participants felt they had the chance to speak (n=15 PwIDD)
- Challenges speaking in larger group on zoom (n=2 PwIDD)
- Felt involved outside of speaking during the program (n=1 PwIDD)

Did you feel like your voice was heard during program sessions?

- Felt heard (n=8 PwIDD)
- Felt respected/understood (n=2 PwIDD)
- Neutral (n=2 PwIDD)

Questions Related to the Evaluation of Student Instructors:

How well did your instructors lead the Snack, Chat, & Chill sessions? Why do you feel this way?

- Positive feedback for instructors (n=23 PwIDD, n=7 CG)
- Constructive feedback to improve instructor's performance (n=2 PwIDD, n=1 CG)

Abbreviations: PwIDD=Person with disability; CG=Caregiver

Note: *indicates caregiver responding as proxy for nonverbal participant (when there is no asterisk, the caregiver was responding for themselves)

Table S2: Focus group questions and summary responses on participant program satisfaction (N=22 PwIDD and 7 Caregivers (CG)).

Questions Related to Facilitation Experience:

What are some of the key lessons learned from facilitating this program?

- Time management, working collaboratively on a team (communication)
- Being prepared for all aspects of each session
- Flexibility and adaptation (with technology, client behavior)
- Patience with participants
- Managing a group of participants; keeping everyone focused

What were some of the challenges you experienced during facilitation of this program?

- Initially, some participants registered who were not appropriate for the program
- Spotty internet connections
- Having participants who do not share camera
- Challenging to lead snack preparation online, without seeing every participant's table

How well do you think facilitation has helped prepare you for future work with individuals with IDD's?

- Saw a broader range of IDD than previously
- Developed patience
- Improved communication skills (e.g., talking slower)

How well did the training prepare you for the facilitation experience?

- Very well
- Having an instructor with prior experience share it with us was helpful

How might we improve the training?

Have more individual mental health resources in the county/area available to us if participants ask for it

How well did you feel you were mentored?

- Training faculty were very helpful and shared their own experiences.
- Appreciated quick email response times from training faculty
- Felt comfortable and prepared to lead the program and know what to expect

How might the mentorship experience be improved?

- None were offered

Is there anything you would recommend changing about the facilitation experience?

- Allow student instructors to set the program days and times
- Some recipes were less popular; add more recipes

Questions related to Program Evaluation:

What activity do you think was most effective with participants? Which one do you think the participants liked best?

- Reading labels: Participants learned the skill well and can apply it
- MyPlate activity: Participants liked it and talked about it in subsequent weeks
- Nutrition games were all popular

What activity do you think was least effective with participants? Which one do you think the participants liked least?

- Eating the Rainbow: One caregiver/parent did not think eating brown/white foods was as healthy

What do you think was the recipe that worked best with participants? Which one do you think they liked best?

- Energy bites were easy to make and participants enjoyed eating them
- Pizza bites were very popular
- Charcuterie boards provided variety of options for participants
- Tuna and chicken salad was very popular

What do you think was the recipe that worked least well with participants? Which one do you think they liked least?

- Pizza bites: One participant found them "too fattening"; others could not find ingredients
- Smoothies: Disliked by one participant because of the substitute ingredients they used
- Tuna and chicken salad: Some participants did not like this item

What Chill activity do you think was most effective with participants? Which one do you think they liked best?

- Positive Affirmations (saying positive things about oneself)
- 5 Senses (guided noticing of what one sees, hears, tastes, smells and feels)
- Body Scan (guided progressive relaxation from feet to the head)

What activity do you think was least effective with participants? Which one do you think they liked least?

- My Relaxing Place (mental imagery of being in a "favorite" place)
- Body Scan (made one participant feel anxious)

Follow-up question: How did repeating exercises for two weeks in a row work?

- Seemed helpful for participants

To what degree do you think participants were able to interact with you and with each other during the sessions?

- Was easy with smaller groups (i.e., 4); conversations around weekend plans and interests
- One group had just one participant; very good rapport between participant and 2 instructors

To what degree was the social interaction a positive experience? To what degree was everyone able to share their thoughts and be heard by others?

- Very positive overall
- Some participants were more vocal than others and needed to be reminded to let others speak.
- Had to mute participants at times (to eliminate background noise).
- Used chat box so that all voices could be heard

Are there any other suggestions you have for improving the program?

- Ensure groups have enough participants to have a group experience

Table S3: Focus group questions and summary results on student instructor satisfaction (N=8).

Topic	Recipe	Nutrition Activity	Mindfulness Activity
My Plate	Tuna or Chicken Salad	Fill the virtual plate with healthy choices from each food group	Five Senses (sensory awareness)
Food Labels	Peanut Butter Energy Bites	Find information on a food label	Five Senses
Portion Size	Charcuterie Boards	Match foods portions sizes to common items	Body Scan (progressive relaxation)
Mindful Eating	Pizza Bites	Fact or Fiction: Identify nutrition statements as true or false	Body Scan
Macronutrients	Egg Mugs	Trivia-style game: Answer nutrition questions	Positive Self-Affirmation
Eat the Rainbow	Yogurt Parfait	Rainbow quiz: Match fruit and vegetables by color group with their health benefits	Positive Self-Affirmation
Healthy Beverages	Fruit and Veggie Smoothies	Match the beverage with its sugar content in teaspoons	My Relaxing Place (mental imagery)
Healthy Snacking	Chocolate Hummus	Snack vs. Treat: Identify healthy snacks vs. treats to eat in limited amounts	My Relaxing Place

Table S4: Program recipes and activities by session.

	Program Completer ^a (n=27)	Program Non-Completer ^b (n=22)
Characteristic	M(SD) or n(%)	M(SD) or n(%)
Gender	18 (66.7%) Male 8 (29.6%) Female 1 (3.7%) Other	11 (50.0%) Male 10 (45.5%) Female 1 (4.5%) Other
Race/Ethnicity	22 (81.5%) White 2 (7.4%) African American 3 (11.1%) Hispanic or Latino(a)	16 (72.7%) White 2 (9.1%) African American 2 (9.1%) Hispanic or Latino(a) 1 (4.5%) Asian or Pacific Islander 1 (4.5%) Other
Age (in years)	34.97 (16.29)	38.68 (17.93)
Body Mass Index (kg/m ²)	31.01 (7.18)	32.64 (9.95)
Systolic Blood Pressure (mm/Hg)	124.40 (11.35)	120.40 (5.71)
Diastolic Blood Pressure (mm/Hg)	77.90 (6.32)	76.20 (20.08)

Employment (job or unpaid volunteer activity)	12 (44.4%) Yes 15 (55.6%) No	9 (40.9%) Yes 13 (59.1%) No
Hours worked per week	12.73 (6.89)	20.78 (11.64)
Living situation	17 (63.0%) with family 2 (7.4%) Independently/on own 6 (22.2%) Independently in group situation with staff support 2 (7.4%) Other	11 (50.0%) with family 2 (9.1%) Independently/on own 6 (27.3%) Independently in a group situation with staff support 3 (13.6%) Other
Participation in organized fitness activity	8 (29.6%) Yes 15 (55.6%) No 4 (13.3%) Unsure	19 (86.4%) No 3 (13.6%) Unsure
Disability diagnosis (as reported by caregiver)	6 (40.0%) ASD 3 (20.0%) ADHD 2 (13.3%) Cerebral Palsy 4 (26.7%) Other	3 (13.6%) ASD 19 (86.4%) unreported
Note: ^a Program completers participated in at least 5 of the 8 sessions and completed both T1 and T2 surveys; ^b Program non-completers participated in 0, 1, or 2 of the 8 sessions.		

Table S5: Demographic characteristics of PwIDD who are program completers vs. non-completers.

		T1 (n=49)			T2 (n=31)		
	Possible range	Actual range	M/%	SD	Actual range	M/%	SD
Dietary knowledge (avg % correct)	0-100	42.86-100	85.71	14.87	0-100	84.38	27.48
Dietary habits							
Fruit daily (% yes)	-	-	59.20%	-	-	67.70%	-
Vegetable daily (% yes)	-	-	67.30%	-	-	83.90%	-
Fast food frequency ^a	1-3	1-3	2.22	0.51	1-3	2.06	0.36
Water daily frequency	1-3	1-3	2.47	0.62	1-3	2.42	0.56
Other beverages	1-3	1-3	2.37	0.64	1-3	2.06	0.57
Dietary confidence	1-3	1-3	2.29	0.59	2-3	2.40	0.51
Sleep quality	1-3	1-3	2.45	0.65	1-3	2.48	0.63
Sleep hours per night	-	5-13	7.95	1.71	5-10	8.15	1.42
Loneliness	3-9	3-9	4.76	1.92	3-9	4.50	1.93
Distress	10-30	10-27	16.27	4.52	10-25	14.94	4.01
Perceived stress	1-3	1-3	2.02	0.60	1-3	2.06	0.73
Coping confidence ^a	1-3	1-3	2.23	0.56	1-3	2.19	0.70
Note: 22 participants who completed T1 did not complete T2; 4 participants who completed T2 did not complete T1. At T1, data were missing for 3 variables (n=1 for sleep hours per night, coping confidence; n=18 for dietary confidence). At T2, data were missing for 2 variables (n=1 for loneliness; n=16 for dietary confidence) ^a T2 kurtosis values of these variables indicated non-normality (fast food=5.44; coping confidence=-2.09)							

Table S6a: PwIDD survey responses at T1 and T2.

		T1 (n=34)			T2 (n=19)		
	Possible range	Actual range	M/%	SD	Actual range	M/%	SD
Perceptions of PwIDD							
Dietary habits							
Fruit daily (Yes) ^{ab}	-	-	69.0%	-	-	84.2%	-
Vegetable daily (Yes) ^a	-	-	72.4%	-	-	84.2%	-
Fast food	1-3	1-3	2.07	0.37	1-3	1.95	0.52
Water daily	1-3	1-3	2.38	0.68	1-3	2.37	0.60
Other beverages ^a	1-3	1-3	2.07	0.38	1-3	2.00	0.47
Sleep quality	1-3	1-3	2.38	0.73	1-3	2.58	0.61
Sleep hours per night ^a	-	5-10	7.79	1.40	5-11	8.26	1.44
Loneliness	3-9	3-8	5.36	1.68	3-6	4.00	1.26
Distress	10-30	10-25	15.72	4.30	10-24	14.29	3.64
Perceived stress	1-3	1-3	2.07	0.47	1-3	2.06	0.57
Coping confidence ^a	1-3	1-3	2.11	0.57	1-3	2.13	0.50
Own experiences							
Dietary knowledge (% correct)	0-100	57.14-100	89.16%	12.46	71.43-100	93.99%	9.89
Dietary habits							
Fruit daily (Yes)	-	-	69.0%	-	-	78.9%	-
Vegetable daily (Yes) ^{ab}	-	-	72.4%	-	-	89.5%	-
Fast food ^{ab}	1-3	1-3	2.03	0.50	1-2	1.95	0.23
Water daily ^{ab}	1-3	2-3	2.69	0.47	2-3	2.89	0.32
Other beverages	1-3	1-3	1.97	0.63	1-3	2.05	0.52

Cooking confidence	0-30	20-30	26.59	2.96	23-30	27.95	2.04
Cooking barriers ^a	0-15	5-15	7.70	2.63	4-12	6.79	1.90
Food resource management	0-5	2.67-5	4.01	0.63	2.33-5	3.86	0.88

Note: 15 caregivers who completed T1 did not complete T2; 5 caregivers who completed T2 did not complete T1. At T1, data were missing for 5 variables (n=1 for perceptions of PwIDD: other beverages, sleep hours per night, sleep quality, perceived stress coping confidence). At T2, data were missing for 5 variables (n=1 for perceptions of PwIDD: sleep hours per night; n=2 for perceptions of PwIDD: distress; n=3 for perceptions of PwIDD: loneliness, perceived stress, coping confidence).
^aKurtosis values of these variables indicated non-normality. Perceptions of PwIDD [T1]: Other beverages=4.68; [T2]: Fruit daily=2.40; vegetables daily=2.40; other beverages=2.71; number of hours of sleep=2.13. Caregivers [T2]: Vegetables daily: 6.51; fast food: 19.00; water daily: 6.51; cooking barriers: 2.15.
^bSkewness values of these variables indicated non-normality. Perceptions of PwIDD [T2]: Fruit daily=2.04. Caregivers [T2]: vegetables daily=2.80; fast food; water daily=-4.36

Table S6b: Caregiver Survey Responses at T1 and T2.

Module	Average % correct responses (number of respondents)
Week 1: My Plate	77.19% (n=31)
Week 2: Nutrition Labels	80.95% (n=30)
Week 3: Portion Size	66.67% (n=35)
Week 4: Mindful Eating	89.58% (n=23)
Week 5: Macronutrients	82.54% (n=27)
Week 6: Vitamins and Minerals	78.43% (n=23)
Week 7: Healthy Beverages	88.41% (n=26)
Week 8: Health	83.33% (n=28)

Table S7: Average percentage of correct responses to the 3-question knowledge survey at the end of each session by PwIDD.