Health Disparate Score Change Over 12 Months: iCook-4H

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BACKGROUND:

Research into health disparities has emerged as a top priority in the U.S. and international literature, but the term has been poorly defined.[1,2,3] Investigating these disparities as they relate to adolescents is particularly important as disparities in this group have been associated with obesity, sexual health, teenage pregnancy, chronic illness, and injury rates, and health at this age forms the basis for adult health.[4] By targeting the disparity characteristics of this population and investigating the change in scores over a prevention program, we can work to eliminate these disparities and improve the health-related quality of life of these citizens by invoking a multi-level approach through community-based participatory research (CBPR).

OBJECTIVE:

To examine the change in health disparity (HD) risk score from one year after the iCook 4-H program.

METHODS:

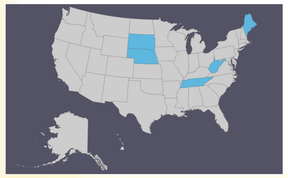
Across five states (ME, NE, SD, TN, WV) research participants including a parent (mean age 38.8±8 years) and a child (9.9±.6 years) were recruited and enrolled in the iCook 4-H program. iCook 4-H uses a CBPR approach through 4H programs to promote health for youth and parents through cooking, playing, and eating together.
HD score was based on 12 variables of the parent/child dyads (n=119), taking into consideration race/ethnic status.

Health disparity (HD) score was created using:

- food security questions (6)
- enrollment in special programs (i.e. EFNEP, WIC) (1)
- adult education (1)
- current marital status (1)
- food behavior (2)
- race (2)

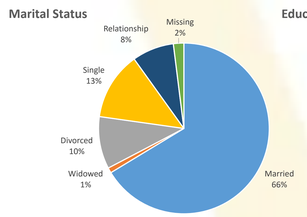
Spearman correlation coefficient (p-value<0.05) was used to analyze an association between HD and CDC Quality of Life (QoL) score and Adult QoL score with race (score ranged 0-13) and without race (range 0-11). Change of risk over one year was measured across a variable composite score of continuous variables only (8).

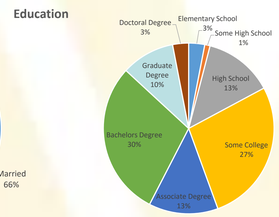
Demographics:

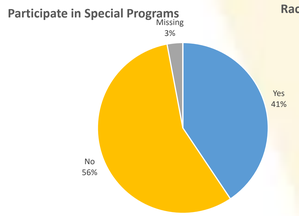


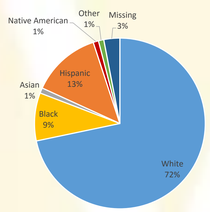
State	Frequency (%)
Maine	57 (25%)
South Dakota	37 (17%)
Tennessee	45 (20%)
West Virginia	44 (20%)
Nebraska	41 (18%)

RESULTS:









Variable	Timepoint	Without Race Spearman correlation coefficient P-Value N	With Race Spearman correlation coefficient P-Value N
# of days felt sad, blue, or depressed (a11cdc6)	Pre	0.348 <0.001 194	0.367 <0.001 192
	Year	0.272 0.002 126	0.273 0.002 125
# of days felt worried, tense, or anxious (a11cdc7)	Pre	0.317 <0.001 195	0.290 <0.001 193
	Year	0.174 0.051 126	0.134 0.138 127
# of days did not get enough rest or sleep (a11cdc8)	Pre	0.106 0.139 194	0.082 0.257 192
	Year	0.168 0.058 127	0.154 0.084 126
# of days felt healthy and full of energy (a11cdc9)	Pre	-0.191 0.007 196	-0.156 0.030 193
	Year	-0.224 0.012 125	-0.181 0.045 124
Adult PedsQoL	Pre	-0.354 <0.001 196	-0.304 <0.001 193
	Year	-0.246 0.005 129	-0.206 0.020 128
Child PedsQoL	Pre	-0.105 0.154 186	-0.074 0.321 183
	Year	-0.205 0.021 127	-0.159 0.076 126
Adult BMI	Pre	0.288 <0.001 186	0.282 <0.001 182
	Year	0.195 0.027 128	0.182 0.041 127
Child BMI	Pre	0.121 0.097 188	0.143 0.051 186
	Year	-0.038 0.671 128	-0.013 0.880 127
Child Waist Circumference	Pre	0.239 <0.001 195	0.233 0.001 192
	Year	0.009 0.923 129	0.019 0.830 128

Health Disparity (HD) Scores:

With Race:

Health Disparity Score	Frequency (%)
0	230 (57%)
1	25 (6%)
2	23 (6%)
3	29 (7%)
4	12 (3%)
5	14 (3%)
6	14 (3%)
7	14 (3%)
8	14 (3%)
9	10 (2%)
10	4 (1%)
11	3 (1%)

Without Race:

Health Disparity Score	Frequency (%)
0	234 (58%)
1	36 (9%)
2	26 (6%)
3	29 (7%)
4	16 (4%)
5	16 (4%)
6	13 (3%)
7	13 (3%)
8	12 (3%)
9	6 (2%)

Descriptives of Health Disparity Score by Group and Time				
Group	Time	Mean	sd	se
Control	Pre	2.24	2.01	0.31
Control	Year	2.10	2.53	0.39
Treatment	Pre	1.90	2.07	0.24
Treatment	Year	1.34	1.99	0.23

Linear mixed model analysis (REML fit, assuming no within-group correlations) using random intercepts. Fixed effects were group, time, and group*time interaction. No significant interaction or group effect, but there is a significant time effect.

	numDF	denDF	F-value	p-value
(Intercept)	1	266	277.516	0
group	1	207	0.225	0.636
time	2	266	6.308	0.002
group:time	2	266	1.475	0.231

Post hoc tests below show a significant decrease in HD from pre to 12 month.

Comparison	Estimate	SE	z-value	p-value
post - pre	-0.1787	0.1025	-1.743	0.1888
12mo - pre	-0.3878	0.1095	-3.541	0.0011
12mo - post	-0.2091	0.1131	-1.849	0.1535

CONCLUSIONS:

Populations that have health disparity (HD) characteristics, both from and without being from a racial or ethnic minority, may change over time due to learning new health behaviors such as cooking skills, identifying healthy food choices and planning ahead.

Particular emphasis may need to be placed on food security for populations with health disparities, as this can lead to a high disparity score and, potentially, lower quality of life. Furthermore, it is not understood how much time from a skill building program can do to reduce risk of HD. Therefore more research is needed in this area.

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Funding provided by Agriculture and Food Research Initiative Grant no. 2012-68001-19605 from the USDA National Institute of Food and Agriculture, Childhood Obesity Prevention: Integrated Research, Education, and Extension to Prevent Childhood Obesity, A2101 and state experiment stations.