Following Up on Food Insecurity

CASCHEW Conference
March 2\textsuperscript{nd}, 2024
Let us march on poverty until no American parent has to skip a meal so that their children may eat.

– Martin Luther King Jr.
Definitions

- Hunger: the individual-level physiological condition (uneasy or painful sensation) that may be the result of food insecurity
- Food security: occurs for a household when “all members, at all times, can access enough food for an active, healthy life.”
- Food insecurity: the limited or uncertain availability of nutritionally adequate and safe foods, or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.
- Nutrition security: defined as “all Americans have consistent and equitable access to healthy, safe, affordable foods essential to optimal health and well-being.” (Per USDA)
Food security status lies along a continuum (based on the number of affirmative responses to the food security module questions).

- High Food Security
- Marginal Food Security
- Low Food Security
- Very Low Food Security

Levels of Food Insecurity

Food Secure

Food Insecure
Prevalence of food insecurity in 2022 increased from 2021

Percent of households

- Food insecurity (including low and very low food security): 12.8 percent
- Very low food security: 5.1 percent


www.ers.usda.gov
33% of Coloradans lack reliable access to nutritious food
Hunger Free Colorado, COVID Food Insecurity Survey, April 2021

16% of Colorado children are not getting adequate nutrition due to financial constraints
Colorado Children's Campaign, KIDS COUNT In Colorado, Aug 2022

20% of adults reported having to regularly cut back or skip meals because there wasn't enough money to buy food
Hunger Free Colorado, COVID Food Insecurity Survey, April 2021

7.5% of older adults face hunger in Colorado, forcing them to make choices between purchasing groceries or medication

9.7% of Coloradans struggle financially, living below the federal poverty line
U.S. Census Bureau, 2021 American Community Survey: Poverty, September 2022

https://hungerfreecolorado.org/facts/
Groups with high rates of food insecurity in the U.S. in 2022

<table>
<thead>
<tr>
<th>Category</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households with children led by women with no spouse</td>
<td>33.1%</td>
</tr>
<tr>
<td>Black households</td>
<td>22.4%</td>
</tr>
<tr>
<td>Hispanic households</td>
<td>20.8%</td>
</tr>
<tr>
<td>Women living alone</td>
<td>15.1%</td>
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</tbody>
</table>

Source: U.S. Department of Agriculture Economic Research Service
Data as of October 2023
I HAVE THE AUDACITY TO BELIEVE THAT PEOPLES EVERYWHERE CAN HAVE THREE MEALS A DAY FOR THEIR BODIES, EDUCATION AND CULTURE FOR THEIR MINDS, AND DIGNITY, EQUALITY AND FREEDOM FOR THEIR SPIRITS.

— MARTIN LUTHER KING JR.
Why consider nutrition security?

• 600,000 Americans die each year from diet-related illnesses
• Rates of obesity and diabetes continue to rise
• Associated with decreased quality of and length of life, and costly from a personal and healthcare system perspective
• Not a complete overlap with food insecurity
• Currently no great quick screening tool available
How Healthy Is the American Diet?

U.S. Scores Over Time

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
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<tbody>
<tr>
<td>2005-06</td>
<td>56</td>
</tr>
<tr>
<td>2007-08</td>
<td>57</td>
</tr>
<tr>
<td>2009-10</td>
<td>59</td>
</tr>
<tr>
<td>2011-12</td>
<td>60</td>
</tr>
<tr>
<td>2013-14</td>
<td>59</td>
</tr>
<tr>
<td>2015-16</td>
<td>59</td>
</tr>
<tr>
<td>2017-18</td>
<td>58</td>
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</tbody>
</table>

The Healthy Eating Index Score shows that Americans do not align their eating choices with the Dietary Guidelines (on a scale from 0-100).

U.S. Scores by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 2-4</td>
<td>62</td>
</tr>
<tr>
<td>Ages 5-8</td>
<td>54</td>
</tr>
<tr>
<td>Ages 9-13</td>
<td>53</td>
</tr>
<tr>
<td>Ages 14-16</td>
<td>49</td>
</tr>
<tr>
<td>Ages 19-30</td>
<td>53</td>
</tr>
<tr>
<td>Ages 31-59</td>
<td>58</td>
</tr>
<tr>
<td>Ages 60+</td>
<td>61</td>
</tr>
</tbody>
</table>

Data source for Healthy Eating Index scores: What We Eat in America, National Health and Nutrition Examination Survey (undated data are from 2017-2018).

USDA is an equal opportunity provider, employer, and lender.

October 2021
Previous work in Western Colorado

• Started with project in 2019 looking at attitudes around data sharing on food insecurity and clinical staff knowledge

• Pilot with a video teaching module for primary care and educators

• Then funded by SIREN to do work around best way to explain the purpose behind screening and referral to encourage more people to accept referral to resources

• Conducted a survey among healthcare staff in practices/organizations participating in the AHCM to understand what they knew about food insecurity and attitudes toward it

• Found high level of past or present food insecurity in primary care staff
Screening

- Action: Medical practice uses validated questionnaire or other process to identify patients with food insecurity.

- Data sharing: Patient shares their personal information with the practice.

Referral

- Medical practice connects the patient via referral system (i.e., data-sharing network, online referral, fax) with food access resources like WIC, SNAP, food banks.

- Medical practice shares patient data with food assistance organization.

Closing the Loop

- Food assistance organization determines eligibility for and supports access to resources.

- Food assistance organization shares patient data with medical practice.
COLAB: Phase 1 Results: Barriers to implementing Screening & Referral for FI

Practice Level: buy-in and funding

Community Level: Capacity and siloing

Patient Level: multiple needs and chaos

Data sharing and collaboration perspectives
Phase 1 Survey Results: Perceived Helpfulness of and Patient Comfort with Data Sharing

![Bar chart showing the percentage of respondents selecting answers for perceived helpfulness and comfort with data sharing for screening, referral, and closing the loop.]

- **Very Helpful**
  - Data Sharing for Screening: Patients (80%), Clinicians (60%), FAO Staff (40%)
  - Data Sharing for Referral: Patients Very Comfortable (60%), Clinicians (50%), FAO Staff (40%)
  - Data Sharing for Closing the Loop: Patients Very Comfortable (60%), Clinicians (50%), FAO Staff (40%)

- **Percent of Respondents Selecting Answers Shown**
  - Patients: Very Helpful (80%), Patients Very Comfortable (60%)
  - Clinicians: Very Helpful (60%), Patients Very Comfortable (50%)
  - FAO Staff: Very Helpful (40%), Patients Very Comfortable (40%)
COLAB: Phase 2 Results: Increased Knowledge

Both significant increases ($p < 0.01$)
Phase 2 Results: Increased Capability & Motivation

- All significant increases ($p < 0.01$)
SIREN Project: Phase 1

- Importance of taking a patient- and person-centered approach to social needs screening
- Value of incorporating specific messages into communications with patients
- Key role that care managers play—need for more resources and support
- Potential for practice-wide training related to the facilitators that we identified to support implementation of social needs screening and referral
Many patients struggle with basic needs like access to housing and food. We are asking all our patients the following questions about their basic needs. Your answers help us understand what local resources might be helpful.

Please answer as many of these questions as you feel comfortable.

It’s For Your Health
- We care about your health and well-being.
- When your basic needs are met, it helps you and your family stay healthy.

It May Help Your Community
- Your answers help us better meet the basic needs of the whole community.

Connect to Resources
- We use your answers about basic needs to suggest local resources.
  - For example, programs that provide help with food, housing, or paying utility bills.

It’s Private
- Privacy is our priority.
- We keep your answers private just like your other medical information.

We are always here to support you and suggest resources to help you stay healthier. Feel free to reach out to our staff if you have any needs or questions.
Trial Stages

Stage 1 (S1): Usual Clinic Screening Process
Form given out at front desk during check-in with no specific explanation

Stage 2 (S2): Addition of Written Messages
Patient-friendly cover sheet added to top of screening form; still given out at front desk during check in

Stage 3 (S3): Addition of Verbal Messages
Form (with cover sheet) given out by MA who gives a brief verbal explanation while rooming the patient
Primary Outcomes

- No significant differences for stage 2 vs. stage 1
- For stage 3 vs. stage 1, adjusted regression results indicated:
  - A significant decrease in response rate within two clinics (OR 0.1 [CI: 0.1-0.3]; OR 0.4 [CI: 0.2-0.7]), but not the third clinic (OR 1.2 [CI: 0.6-0.3])
  - A significant increase in assistance acceptance rate (no clinic-specific differences) (OR 2.1 [CI: 1.1-4.0])
Secondary Outcomes

- No significant differences for stage 2 vs. stage 1
- For stage 3 vs. stage 1, adjusted regression results indicated:
  - A non-significant increase in comfort (OR 1.5 [CI: 0.9-2.4])
  - A significant increase in helpfulness (OR 1.9 [CI: 1.2-3.0])
  - A large significant increase in receipt of explanation (OR 12.0 [7.0-20.6])
Key Take-Aways from Stage 2

- Addition of written messages alone (stage 2) had little impact.
- Increase in patient-reported receipt of explanation in stage 3 indicates MAs were delivering verbal messages when they gave forms to patients.
- Effects of verbal messages (stage 3) seem contradictory.
- Possible reasons for decreased response rate in stage 3 include workflow challenges and more selective non-response.
## Respondent Role

<table>
<thead>
<tr>
<th>Role</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front desk staff</td>
<td>33 (9.6%)</td>
</tr>
<tr>
<td>MA</td>
<td>26 (7.6%)</td>
</tr>
<tr>
<td>Physician</td>
<td>13 (3.8%)</td>
</tr>
<tr>
<td>RN</td>
<td>59 (17.2%)</td>
</tr>
<tr>
<td>LPN</td>
<td>2 (0.6%)</td>
</tr>
<tr>
<td>Nurse practitioner</td>
<td>5 (1.5%)</td>
</tr>
<tr>
<td>PA</td>
<td>7 (2.0%)</td>
</tr>
<tr>
<td>Behavioral health provider</td>
<td>17 (4.9%)</td>
</tr>
<tr>
<td>Care manager/coordinator</td>
<td>24 (7.0%)</td>
</tr>
<tr>
<td>Practice manager</td>
<td>15 (4.4%)</td>
</tr>
<tr>
<td>Quality improvement</td>
<td>20 (5.8%)</td>
</tr>
<tr>
<td>Other</td>
<td>123 (35.8%)</td>
</tr>
</tbody>
</table>
Personal Experience with Food Insecurity

<table>
<thead>
<tr>
<th>Respondents reporting:</th>
<th>N = 282</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current food insecurity (based on the 2-item Hunger Vital Sign screener)</td>
<td>52 (18.3%)</td>
</tr>
<tr>
<td>Past food insecurity (based on 1-item measure)</td>
<td>129 (46.0%)</td>
</tr>
</tbody>
</table>
Perceived causes of food insecurity: factors that place responsibility on the individual

- Contributes a lot: 68.7%
- Contributes a little bit: 28.7%
- Does not contribute: 2.3%

N = 341
Idea for current study

- As part of the AHCM, practices were supported and encouraged to screen for HRSNs
- Regional health connectors in W Co have generally chosen food insecurity as an area of focus
- Practices in the West Mountain region expressed an interest in understanding whether their efforts at screening and referral were “working” – were people being connected to resources and was their nutrition or food security improving?
Partners

• West Mountain Regional Health Alliance: regional entity formed in 2010, working to align healthcare providers and partners, expand access, and advocate for change.

• Mountain Family Health Centers: FQHC system with clinics in Avon, Basalt, Glenwood Springs, Gypsum and Rifle

• Quality Health Network (providing the funding for this pilot): Western Colorado Health Information Exchange, also home of the Community Resource Network
Data collection

• After screening occurs at MFHC, people who screen “positive” for food insecurity are offered participation
• If they complete HIPAA A form, contact information is shared with study team
• They then receive a text and/or phone call asking them to participate
• If they agree, they receive a specific REDCap link to complete
• If they complete baseline survey, automatic links sent again at 1 and 3 months
• Receive City Market/King Soopers gift cards for each survey completed
Measures we are collecting

• USDA long form food insecurity tool
• 4D-FIS
• Brief nutrition quality screening tool
• Qualitative interviews with a subgroup (approx. 20) at 3 months
USDA screening questions

• The first statement is “(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more.” Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?
  • [ ] Often true
  • [ ] Sometimes true
  • [ ] Never true
  • [ ] DK or Refused

• “The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?
  • [ ] Often true
  • [ ] Sometimes true
  • [ ] Never true
  • [ ] DK or Refused
During the last 30 days...

**Quantitative**
1. How often did you eat something small or a snack instead of eating a full meal because there was not enough food?
2. How often did your stomach ache, cramp, or feel uneasy because you needed to eat but there was not enough food?
3. How often did you go to bed feeling hungry because you needed to eat but there was not enough food?

**Qualitative**
4. How often did you eat very little of the foods you thought were important, because there was not enough food?
5. How often did you eat very little foods you preferred to eat because there was not enough food?
6. How often did you eat only canned foods, boxed foods, or packaged foods for several days in a row because there was not enough food?
7. How often did you eat the same foods or meals over and over again because there was not enough food?
8. How often did you have a main meal without meat because there was not enough food?
9. How often did you eat foods that were bruised, moldy, or looked unsafe to eat because there was not enough food?

**Psychological**
10. How often did you worry that you would not have enough food for that night or the next night?
11. How often did you worry that you would not have enough food next week or the week after that?
12. How often did you feel anxious or stressed because you did not know how you would get enough food?

**Social**
13. I felt that I had little control over my food situation
14. It’s not fair that some people can have all the food they need and I cannot have the food I need.
15. I felt embarrassed or hid my food situation from others.
16. I felt different from other people because I could not get enough food.

**Fig 1 | The Four Domain Food Insecurity Scale (4D-FIS).** The 4D-FIS covers the four domains of the food access dimension of food insecurity: quantitative (3 items), qualitative (6 items), psychological (3 items), and social (4 items). For the quantitative, qualitative,
# Fruit and Vegetable Checklist

<table>
<thead>
<tr>
<th>Fruit and Vegetable</th>
<th>Criterion Validity for Subscale: Serum Carotenoid Correlation (n = 59)</th>
<th>Convergent Validity for Subscale: Recall Nutrient and Food Group Correlation (n = 100)</th>
<th>Internal Consistency for Subscale (α or Spearman Correlation if Only 2 Items (r) (n = 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you eat more than 1 kind of fruit daily?!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. During the past week, did you have citrus fruit or citrus juice?!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reword: During the past week, did you have citrus fruit (such as orange or grapefruit) or citrus juice?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Do you eat more than 1 kind of vegetable a day?!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How many servings of vegetables do you eat each day?!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Do you eat 2 or more servings of vegetables at your main meal?!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Do you eat fruit or vegetables as snacks?!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. How many servings of fruit do you eat each day?!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-Item fruit and vegetable scale</td>
<td>0.44***</td>
<td>Servings fruit, .36**** vegetables, .33** fiber, .31** vitamin C, .32*** vitamin A, .29** folate, .28* beta-carotene, .25*</td>
<td>α = .80</td>
</tr>
</tbody>
</table>
Progress so far

• 25 people have completed the HIPAA A form, 10 have completed the survey
• Initial data shows mostly low food security – worry and concern over not having enough food, but little true hunger (one respondent reported missing meals, going to bed hungry)
• Will need to continue assertive outreach to recruit given we would like to survey 60 people (would require 150 people to agree to HIPAA A if current trend continues)
Future Directions

• This data will give us an idea of what changes for people after screening occurs
• Will also give us an idea of whether people are connected to new resources
• May indicate some ways that this process could be more effective
• May indicate some ideas for interventions or studies that cross-sectors, and possibly ideas around improving diet quality
Hunger is not a problem. It is an obscenity. How wonderful it is that nobody need wait a single moment before starting to improve the world.

— Anne Frank
FOOD IS NATIONAL SECURITY. FOOD IS ECONOMY. IT IS EMPLOYMENT, ENERGY, HISTORY. FOOD IS EVERYTHING.

– CHEF JOSÉ ANDRÉS