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Abstract

Low-income workers' perceptions of wages, food acquisition, and well-being

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Background: Seattle's Minimum Wage Ordinance went into effect in 2015 with a schedule to increase the minimum wage to $15/hour. Previous studies have demonstrated an association between increased economic resources and improvements in food security and health. Higher wages could theoretically be used to purchase food, but could also result in losses to public assistance.

Purpose: The aims of this analysis are to describe how low-wage workers perceive household resources in relation to food acquisition, and to explore how workers in low-wage jobs connect food and diet to perceptions of health and wellbeing.

Methods: We analyzed three in-depth qualitative interviews and one phone survey from the Seattle Minimum Wage Study with 55 workers in low-wage jobs who were living in households with children, conducted between 2015-2017 (n=190 observations). We coded and analyzed

interviews using Campbell's food acquisition framework and best practices for qualitative research.

Results: Participants relied on a combination of wages, government assistance, and private assistance from community or family resources to maintain an adequate food supply. Strategies tended to focus more on maintaining food quality than food quantity. Restricted resources also limited food-related leisure activities, which many participants considered important to quality of life.

Conclusions: Although many low-wage workers would like to use additional income to purchase higher quality foods or increase food-related leisure activities, they often perceive tradeoffs that limit income-based adjustments to food spending patterns. Future studies should be specifically designed to examine food choices in response to changes in income.

Background

Social and economic determinants are widely recognized as important drivers of health generally and healthy diets specifically.[1] Poorer populations are much more likely to experience food insecurity, which is a disruption in food intake or regular eating due to lack of money or other resources.[2,3] Negative health outcomes associated with food insecurity include malnutrition, obesity, and depression as well as increased risk for chronic disease, reduced mental well-being, and decreased cognitive/academic performance.[4–6]

Increased economic resources improve food security and health among low-income households. For example, expansions of Supplemental Nutrition Assistance Program (SNAP) benefits during the Great Recession were followed by a 2.2% decrease in food insecurity among households eligible for SNAP.[7] A randomized trial found improved diets in SNAP-eligible beneficiaries when simultaneously restricting the range of food purchasing while also discounting fruits and vegetables.[8] A 2014 study of American Indian tribes found that opening or expanding a casino was associated with increased economic resources and a decreased risk of childhood overweight and obesity.[9]

Since 2014, a record number of cities and counties in the US have adopted policies to increase the minimum wage, generally with the goal of addressing growing wage inequality and cost of living.[10,11] Evidence evaluating the effect of wage and income policies on health is still relatively nascent and inconclusive, with research examining policy effects on food behaviors, diet, and diet-related health outcomes specifically being more sparse.[12,13] While additional income could theoretically be used for food, higher wages could also result in losses of public assistance. Eligibility for SNAP is based on income and assets, and monthly benefit amounts are based on food prices, household size, and income.[14]

Evidence examining the association between higher minimum wages and obesity range from modestly negative to modestly positive.[12,15–22] Minimum wage has also been associated with a reduction in the prevalence of underweight in women[22] and markers of malnutrition in children.[23] Two studies have provided countervailing evidence in the evaluation of higher minimum wages and fruit and vegetable consumption with one concluding it decreases consumption[21] and the other that it increases consumption.[24] Another study examined minimum wage increases across 24 countries and found significant reductions in diabetic and cardiovascular disease mortality[18] while another found reductions in heart disease deaths.[25] There has been little consensus in these evaluations of the relationship between household resources, food security, and health outcomes with respect to the appropriate population of study, study designs, and choice of analytical methods,[12] which may, in part, explain the complex array of findings. Particular care must be taken when selecting methods in the evaluation of policies or interventions aimed at a particular segments of the population (e.g. minimum wage, SNAP).[24] Moreover, there has been a paucity of qualitative research assessing worker perceptions of low-wage jobs, food acquisition, and worker health and wellbeing.[26] Little is known about how workers in minimum-wage jobs experience a wage increase and if or how additional earnings might be used to improve the quantity or quality of food. Qualitative research can provide insights to the experiences and coping strategies of low-income individuals and their families particularly with respect to how workers in low-wage jobs make decisions about allocating household resources to food in a way that quantitative research alone cannot uncover.

To investigate this gap in the literature, this study takes advantage of qualitative interview data collected between 2015 and 2017 from a longitudinal cohort of low-income workers in low-wage jobs who were interviewed multiple times during the implementation of Seattle's

Minimum Wage Ordinance (hereafter "the Ordinance"), which increased the minimum wage for all workers inside the city to $15/hour over time.[27] The aims of this analysis are to describe how low-wage workers perceive household resources in relation to strategies for food acquisition, including how these resources and strategies might change in the context of the minimum wage policy change, and to explore whether and how workers in low-wage jobs connect food and diet to perceptions of health and well-being. To our knowledge, this is the first study to examine both the social context and the experiential dimensions of food acquisition decisions and food access through interviews with workers as they experienced the implementation of a city-level minimum wage policy.

Methods

Study Design

The current analysis used qualitative interview data from the Seattle Minimum Wage Study (SMWS), a multi-component evaluation of the Ordinance conducted at the University of Washington (UW).[28] The qualitative study enrolled 55 participants in 2015 and included three in-depth, in-person interviews and four shorter phone surveys between 2015 and 2017. The goals of the longitudinal cohort study were to capture worker perspectives on and experiences with work, budgets, and family life. Below, we briefly describe relevant information for this analysis. The full study design can be found elsewhere.[28]

Participants and Procedures

From February to May 2015, researchers at the UW actively recruited participants at partner organizations in the community. A priority of the original study was to capture diverse worker experiences of workers with families who would be affected by implementation of the Ordinance, with a particular focus on the perspectives of immigrant and non-English speaking

workers. A full list of recruitment partners is available in the SMWS 2016 report.[26] Researchers also provided recruitment flyers to libraries, affordable housing buildings, social service agencies, and over 40 restaurants, hotels, and bars. The criteria for participant inclusion were an hourly wage of no more than $15, an annual family income of less than $50,000, and at least one child under the age of 18 living in the household.

From 2015 to 2017, the research team conducted three in-depth, in-person interviews and four shorter phone surveys. The study participants were offered a $40 incentive for in-depth interviews and a $10 incentive for phone surveys. Interviews were conducted in English, Spanish, or in English with live interpretation to Cantonese, Vietnamese, or Somali, depending on the language preferences of the participant. The interviews lasted 60-90 minutes and were audio recorded. Interviewers used an interview guide with a set of open-ended questions and suggested probe questions to follow-up about work conditions, family budgets, and family life. The respondents also filled out a short survey on their demographic and job characteristics. Research staff conducted a total of four, 5- to 10-minute phone surveys between the yearly in-depth interviews. The second phone survey asked explicitly about grocery shopping and eating out. Example questions included "If you knew you would have $100 extra in every paycheck in the next year, would it change where or what your family eats, and why?" All interviews were professionally transcribed and cleaned of identifying information. All names used in this manuscript are pseudonyms.

Table 1 shows that response rates were high throughout the study, with 80% of participants completing all three waves of in-depth interviews and 71% of participants completing Phone Call 2. A more detailed description of the study design, recruitment, and retention is available in the SMWS reports to the City of Seattle in 2016 and 2017.[26,29]

Table 1. Number and Percent of Completed Interviews by Mode and Wave, Qualitative Component of the SMWS

Mode & Wave	Number of completed interviews	% of original sample (n=55)
In depth, in-person 1*	55	100
Brief phone interview 1	38	69
Brief phone interview 2*	39	71
In depth, in-person 2*	49	89
Brief phone interview 3	44	83
Brief phone interview 4	45	85
In depth, in-person 3*	47	92
Completed all waves	44	80
Total person-wave observations analyzed for this study	190	--

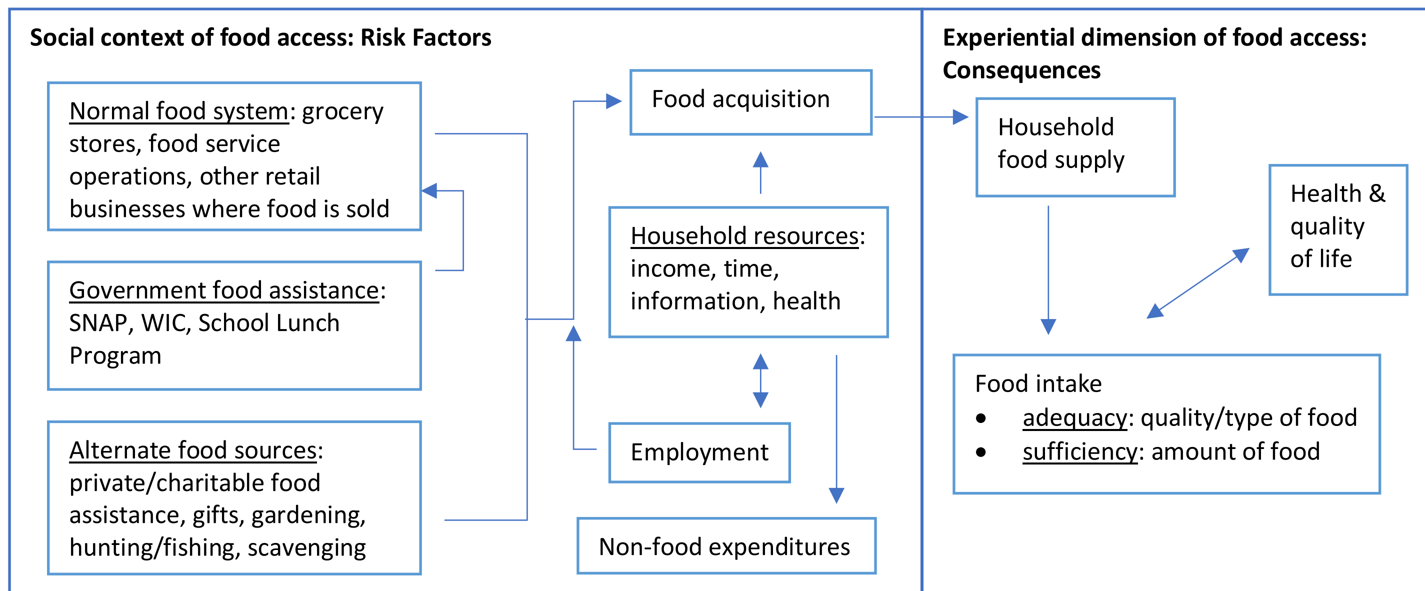
Source: Qualitative Component of the Seattle Minimum Wage Study.
Notes: *Wave included in this analysis

Data Analysis

Our analysis includes all three waves of the in-depth interviews and one wave of phone surveys (Phone Call 2), for a total of 190 person-wave observations. To get a sense of the extent to which food and nutrition topics emerged from the data, we coded a sample of interviews from 15 participants using qualitative data analysis software (Dedoose version 8.1.9) for excerpts relating to food and nutrition. From this sample of excerpts, we used an inductive approach to identify and note patterns. To better address our research questions we then developed deductive codes using Campbell's food acquisition and food security framework, which is described in further detail below.[30] Variations from this framework were identified inductively as they emerged. We tested and refined the codebook using a sample of transcripts until we determined that all relevant codes were included and thoroughly defined in a manner that allowed for reliable application. Two trained researchers (LB, JW) independently double-coded 10% of the transcripts (n=19 transcripts) with at least 90% agreement. The remaining interviews were coded by one researcher (LB).

The food security framework that we adapted for our analysis was part of a paper presented at a 1990 symposium, "Nutritional Assessment and Intervention: Interface of Science and Policy."[30] In this paper, Campbell called for more research that considers both the risk factors (the social context) and the consequences (the experiential dimension) of food access. The framework we are using is Campbell's conceptualization of these factors according to general consensus among researchers. We chose this framework because it captured major themes we identified during our initial inductive analysis, and because it organized these themes in a way that helped focus our aims on the relationship between the social context and experiential dimension of food security and food acquisition. Other recent studies have used this framework to examine or define the link between food insecurity risk factors and specific physical or mental health outcomes.[31,32] Figure 1 shows a modified model of the framework with descriptions of key components. Components are divided into the social context of food access, representing the risk factors for food insecurity, and the experiential dimension of food access, representing the consequences of food insecurity. Table 2 describes the key components of the model that were a particular focus of our study.

Figure 1. Modified Model of Campbell's Framework for Food Acquisition and Food Security



Source: Modified from Campbell[30]

Table 2. Key components adapted from Campbell's framework for food acquisition and food security

Normal Food System	Grocery stores, food service operations, or other retail businesses where food is available
Government Food Assistance	Government food assistance programs, including SNAP, WIC, and the School Lunch Program
Alternate Food Sources	Private food assistance (from family, friends, or charitable organizations) and food sources outside of the conventional food system (such as gardening, fishing, or scavenging)
Household Resources	Earned income, time, health status, and information available for food acquisition
Household Food Supply	Assessments of the household food supply and strategies to manage the household food supply or food budget
Food intake sufficiency	Assessments of the quantity or frequency of food intake
Food intake adequacy	Assessments of the quality or type of food intake
Health and quality of life	Physical health and subjective well-being

Results

Participant Sample Characteristics

The participant sample was predominantly female (80%) and born outside of the United States (60%). With regard to race/ethnicity, half of participants identified as Black, 7 percent as White, and the other 43 percent as Asian, Hispanic, or other/biracial. Partner status was evenly split

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between single and married (42% each), with remaining participants cohabitating (16%). Ages ranged from 24 to 56 years old, with a mean age of 38 years old at study inception. Household size ranged from 2 to 11 people, with an average household size of 4.1 people. Caregiving and health services were the most common occupation (22%). See Table 3 for further details of the sample's demographic characteristics.

Table 3. Sample Demographics (n=55)

	Number (%)
Gender	
Female	44 (80%)
Male	11 (22%)
Partner status	
Married	22 (42%)
Single	22 (42%)
Cohabitating	9 (16%)
Country of birth	
Outside US	33 (60%)
US	22 (40%)
Race/ethnicity	
Black	28 (50%)
Asian	10 (18%)
Hispanic	7 (13%)
White	4 (7%)
Other/Multiple	6 (11%)
Occupation	
Caregiving & Health Services	12 (22%)
Childcare & Teaching	9 (17%)
Cleaning/Janitorial	6 (11%)
Food Service	9 (17%)
Reception/Admin	5 (9%)
Retail/Sales	5 (9%)
Social & Human Services	4 (7%)
Other	3 (6%)
Mean age	38
Mean household size	4.1

Source: Wave 1 demographic information from the qualitative component of the Seattle Minimum Wage Study.

Household Resources

Campbell identifies four household resources for food acquisition: 1) money, 2) time, 3) information, and 4) health. In our sample, the workers focused primarily on money and time as key factors affecting their food access, paying far less attention to information or health. Most workers in this sample had income from work earnings and public assistance, including SNAP, complicating the relationship between higher wages and food. Wages were a major focus of the interviews, and frequently emerged as a resource for food acquisition. Some participants attributed an adequate food supply to increases in household income due to changes to employment status, hours, or wages. However, more than a third of participants associated increases in income with decreases in funds from government assistance programs or increases in prices for basic needs. Eden, a caregiver with five children, describes the tradeoff between higher wages and government benefits for food and housing.

> *Somehow it is good so you can get big check. You can do for your personal stuff for the kids and everything, helping for your family. The other way is like, when you get the paycheck they're gonna minus it for your food stamp and the housing goes up so you are not saving anything. So for me, it's not like nothing to me.*

In particular, participants anticipated that the minimum wage ordinance would increase food prices and cost of living offsetting increased wages. For participants like Anh, a new mother working as a caregiver, these tradeoffs contributed to a perceived lack of change.

> *It's still the same. Because when they increased [the minimum wage], the rent also increased. And the food and everything just increased. And we pay more tax. So, everything's just the same.*

Responses related to the connection between wages and public assistance tended to portray increasing food prices as a barrier to reaching financial stability. However, some participants found value in relying less on SNAP for food acquisition.

Despite the perceived tradeoffs between higher wages, government assistance, and food prices, many participants predicted that additional income would facilitate changes to food choices within the normal food system. The most commonly predicted changes included shopping for higher quality or healthier food, eating out more frequently and/or eating out at higher quality restaurants. Several participants specifically brought up organic food when talking about the types of foods they would like to purchase with additional income. Refer to Table 4 for further examples of illustrative quotes of household resource tradeoffs and other key themes.

The timing of pay for work may be more important than the wage rate for some families experiencing food insecurity. A few participants pointed out the urgency of coming up with money for food each day. For Sean, a father of three who worked multiple jobs, lack of money for food was itself a barrier to steady employment.

> *And when I did find something full-time, I couldn't take it full-time because I needed money that day. Like we had no, we don't have food. I need to feed my family, and I can't say, 'Hey, you're gonna get paid this time next week.'*

Time also factored into participant responses as a resource for food acquisition and intake patterns. Several participants expressed a preference for a work schedule that would facilitate time for eating or preparing meals at home. For example, Califa, a mother of six, found that operating a childcare business in her own home facilitated more time for meal preparation for her family.

And this job, family always finds me at home. I'm home cooking fresh meals, preparing. I'm home all the time, and it's been good.

Among participants who reported restrictions in the amount or types of food eaten, lack of time was often an important factor. Virtually all of the participants who mentioned time constraints as a barrier to desired food intake patterns were female, but they varied with regard to number of work hours (less than or greater than 30 hours), household size, and marital status.

While information was not a major theme that participants identified directly as a resource for food acquisition, their descriptions of strategies for managing the household food supply alluded to a variety of skills and information resources. For example, several participants mentioned cooking at home or flexibility in food preparation techniques as strategies for stretching the food budget, and described some these strategies as skills they were either trying to learn or trying to teach to their children. A few participants discussed altering their food choices after learning about nutrition from a class or from experiences at their place of employment. Many participants demonstrated extensive knowledge of a variety of government and private food assistance programs and services. Similarly, health did not emerge frequently in the interviews as a direct resource or risk factor for food security. A few mentioned health conditions or disabilities (either among family members or for the respondents themselves) as a factor in employment opportunities or constraining the types of food they could eat. One participant associated these dietary restrictions with greater transportation costs and more time required to shop for food that fit her health needs. As we discuss below, health and quality of life emerged more as a consequence of food acquisition risk factors.

Food Acquisition Sources

In accordance with Campbell's framework, we examined three major sources for food acquisition: 1) the normal food system, 2) government food assistance programs, and 3) alternate food sources. Refer to Figure 1 for more details on these sources and their relationships. Our analysis revealed that the three sources were more interconnected for the sample population than the Campbell framework suggests, and that employment sites may be a fourth source of food acquisition. Many participants explained that they rely on a combination of different food sources and strategies to maintain an adequate food supply, with no single source sufficient to meet all of their needs. Evelyn, a single mother who worked in retail, described using the food bank to make ends meet after running out of SNAP benefits.

> *I don't get my stamps until the eighth of each month, which is really late because already a week into the month, so that last week, we're down to beans and rice, or the last little bit of meat I might have, but I do get a delivery from the food bank each week through the U Dub food bank, which is nice…*

Government food assistance programs that participants described using included SNAP, school lunch programs, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). SNAP was a specific focus of interview questions, and it figured heavily in participant discussions of food acquisition. Although participants reported shopping at grocery stores within the normal food system that accept Electronic Benefits Transfer cards, a few participants felt constraints in the places and the types of food they could purchase using SNAP. One participant reported accumulating credit card debt at food service operations when she was not able to get to a grocery store for SNAP-eligible food purchases.

Among participants who experienced changes to eligibility for SNAP or to the amount of benefits received, some brought up the challenge of adjusting to new budgeting strategies. Nicole, a new mother working in social and human services, expressed frustration that she could not allow her $15/month SNAP benefits to accumulate to a more meaningful amount.

They sent me a letter when I let it rack up to $30, talking about, 'Oh, you're not using your money.' Are you guys serious? I can buy some almond milk for $4, some broccoli for $3 – you know what I'm saying? I'm going to let it rack up to $30 so I can maybe get six items, and not have it at $15.

A few participants reported limiting how much SNAP assistance they sought in order to reserve it for those most in need. In some cases, participants expressed satisfaction and/or pride in relying less on government benefits despite a lack of change to overall food spending.

Campbell observed in 1991 that the private food assistance network was rapidly becoming an institutionalized third tier of the conventional food distribution system.[30] The results of our analysis were consistent with this assessment. Most participants reported relying on alternate food sources—especially community food banks or friends and family—when other resources were exhausted. Among these participants, many expressed a sense of security in having these alternate sources as a safety net. Participants who immigrated to the United States from Somalia were particularly likely to emphasize family and community resources for food. Three of the thirteen participants who had immigrated from Somalia noted direct connections between Somali culture and communal food resources. Nassir, a Somali father of four who was working as a driver, described how Somali grocers supported the community.

Well, sometimes we got our local people grocery before. Most Somali communities have. If you don't have money, they give you a whole supply for

the month food then you pay them back slowly. They are a helping community…It's the culture they have.

Other alternate food sources that were less prominently discussed were gardening and fishing. For both of these sources, a few participants discussed them in connection with health and quality of life more than food acquisition.

Places of employment emerged as another significant food acquisition source that expanded the major sources identified in Campbell's framework. Many participants were employed in positions directly related to meal service or preparation, including work in restaurants, grocery stores, and caregiving (see Table 2). Other participants worked at employment sites unrelated to food preparation that provided meals to staff. Participants from both of these groups mentioned relying on food acquired through their employment site as part of their regular food supply. Martina, a restaurant cook with a young child, decided not to pursue a higher paying job outside of the food industry in order to maintain her food supply from work.

The good part about the restaurant is that I can get food in there…Otherwise, if I [work] somewhere else, which is not a restaurant, I have to pay for my food. In this part, it's three days a week I can get food, free food, which is really good. It helps.

Food Intake and the Household Food Supply

Most participants reported having an adequate household food supply and/or enough money for food during the study period. However, many participants described adjustments to food intake in response to restrictions in the food budget or the household food supply. Participants emphasized compromises to the quality and type of food consumed much more frequently than adjustments to the amount or frequency of food intake. Common adjustments to the types of food

consumed on a tighter budget included: purchasing inexpensive frozen or processed foods, eating out less frequently, purchasing more fast food, and sacrificing preferred or higher quality foods that are more expensive. Adjustments to the amount or frequency of food intake were described in combination with compromises to the types of food consumed. Several participants expressed disappointment in not being able to afford foods that are more nutritious. Shanae, a receptionist with two children, associated a stricter budget for food and gas with more limited access to quality foods from grocery stores.

> *I've just been buying fast food…And I know that food is garbage, but it's like, okay, do I want to spend $50 on groceries or just spend $10 and we ate for the night and everybody's good until we figure out what we're going to eat tomorrow.*

A few participants indicated that food was a priority, and that they were unwilling to compromise on providing nutritious meals for their families. These participants tended to make adjustments through purchasing affordable dried goods in bulk and preparing meals at home. Several participants mentioned the challenges of making adjustments to the household food supply in a family with children, including pushback from children about the types of food they wanted to eat, a desire to provide children with treats, and the perception that growing or athletic children have big appetites or high intake needs.

Health and Quality of Life

For our participant sample, health and quality of life in relation to food acquisition and food intake were discussed more frequently with regard to mental health compared to physical health. When asked about times that they felt stressed and times when they felt relaxed or happy, about half of the participants mentioned food and food-related activities in their responses about

subjective well-being. Most participants who did described food-related activities as a way to reduce stress and to bond with family, friends, or coworkers. For some participants, limited income was a barrier to taking part in food-related leisure activities such as eating out at restaurants. Carlo, a custodian with two children, described these constraints as a constant source of stress.

> *It is difficult because I would like to have fun once every month and go to a restaurant, maybe go to the theater but unfortunately we have to sacrifice that part because we don't have the resources, and we don't have the resources and you live day after day and it affects you, that affects your personal life, that's stressful…*

Several participants also associated limited funds and reliance on government assistance with stress. This observation fits with Campbell's framework, in which anxiety is a consequence of food restrictions.

Participants who emigrated from other countries sometimes described more traumatic past experiences of food insecurity compared to their experiences in the United States. These participants were more likely to express satisfaction with their current household food supply, even as they described restrictions in food intake.

Table 4. Illustrative Quotes of Key Themes

Social Context	
Household resource tradeoffs	• But they pay me so much that food stamps stopped for me. They were like you're making more money now. So you're not going to get food stamps. I was actually proud. I was like good for me. • I think the ordinance is great. I think it's awesome. The problem is keeping everything else low enough so it works. If there isn't a moratorium or a cap of some sort put on then how's that gonna make everything as affordable at $15.00 as it was back on $10.00? To me, that's the biggest question I have of all of this. What's gonna keep the milk and eggs from going up within the city limits? Those are usually the first indicators for food.

Time as a risk factor for food security	• I find myself buying fast food a lot or getting stuff already made at the grocery stores or coming home and make them something quick. And I feel guilty about that. I want my daughter to eat better and just to have more time to do stuff. We have no time. • I never have time to have breakfast; I don't know why. It doesn't matter if I get up at 6:00 or 5:00. I never have enough time for myself…
Experiential Dimension	
Compromises to food intake: adequacy vs. sufficiency	• We don't ever get totally like we don't have anything at all. We just won't – it'll just get – I don't know. I won't have the things I really wanna cook with like meats or all the fresh vegetables or fruit that I wanna have; those core things. Yeah. Or, I won't be able to buy organic milk; I'll switch to buying the regular milk. • You might only get one waffle instead of two until they run out. Or I will eat all of the food in the cabinets before we try to go buy something else. Let's eat what we have, even though it might not be what you want.
Food activities associated with quality of life	• I don't know how we ate it, but we ate shrimp, and we had some shrimp with rice and some stuff that you just – I enjoy seafood… – I still, still to this day, I still laugh about some of the things that happened. It was just carefree. I didn't think about the rent. I didn't think about what was due. I didn't think about the bus or getting him, dropping him, or him try to find a job or any of that. • I really like to see my kids happy, so I loved taking them out and going to take them shopping. They're like, "Oh, this is really cool." We even had a couple of times where we got to take them out to dinner. To them, they know that we can't always take them to the Cheesecake Factory. But when we do, they know, "This is really cool. Mom and Dad really did it for us."

Discussion

This study identified many ways that household resources, namely income and time, factor into food acquisition strategies among workers in low-wage jobs, and how low-wage workers see food and diet as connected to general well-being. The workers in this study described relying on a combination of wages, government assistance, and private assistance to maintain an adequate food supply; many perceived that policies designed to increase wages could result in decreased eligibility for food benefits and higher prices of food and other essential items. Time for food acquisition and meal preparation also figured prominently in how they think about and choose foods, and some described focusing on immediate needs based on resources available in the very near term. When faced with limited resources, low-wage workers tended to describe changing

the types and quality of foods consumed more than the amount or frequency of consumption. Finally, participants discussed explicit ties between food and health fairly infrequently but described mental health and quality of life ramifications more often.

Previous studies have established an indirect relationship between income and food insecurity, demonstrating that economic determinants are important to food security but are complicated by other factors, such as loss of government assistance or changes to costs of healthcare.[33,34] Our analysis is consistent with these observations and provides context on how these risk factors are related. Particularly as states and localities continue to consider economic and wage-based policy changes, the full spectrum of risk factors and their relative impacts on food security must be better understood.[30]

One such risk factor is the perceived or actual cost of food. Many participants in our study described increased food prices as an expected tradeoff to higher wage rates. Consistent with that anxiety, the SMWS employer survey (not used in this study) revealed that the most common employer response to the Ordinance was to raise prices for goods or services (46%).[29] However, a 2017 analysis of six supermarket chains in Seattle determined that there were no significant differences between average baseline and follow-up prices.[35] Policies that aim to enhance food access for workers in low-wage jobs may therefore be limited by expected marketplace responses, regardless of actual trends within the food industry.

Lack of time resources were another risk factor that came up frequently among study participants. Women working in low-wage jobs may be particularly vulnerable to time constraints, due to relative lack of flexibility or predictability in work schedules.[36] A 2010 study estimated that the time cost of food is up to 26% higher for those receiving government food assistance based on the opportunity cost of wages and the market price of substitutes for food

preparation.[37] Similarly, a 2013 study found that food insecurity was associated with 20% more time spent on meal preparation and 13.4% less eating time among single (vs. married) households.[38] Thus, previous studies have investigated lack of time resources as a possible consequence of food insecurity. Although our analysis provides some context for these observations, future research should consider lack of time as a possible risk factor for food insecurity and how policies may influence time as well as other household resources.

Research regarding the possible psychosocial outcomes of food insecurity is more robust, and fits with the quality of life outcomes observed by our participant sample. A study of low income households in Quebec found that consequences of food insecurity included stressful family meal experiences or household dynamics and lack of opportunity to invite friends to dinner.[39] These consequences are similar to some of the challenges reported by participants in our study. Downstream outcomes of these reported stressors to family meals could include an increased risk for disordered eating patterns among children in food insecure households.[40] A study of freshman college students at an Ohio university determined that a history of food insecurity was associated with higher disordered eating scores and higher body mass index, as well as higher levels of stress and depressive symptoms.[31] A 2015 review points out that health variables such as depression are plausible both as predictors and outcomes of food insecurity, and the causal relationship warrants further study.[41] However, Campbell argues that food insecurity is itself an undesirable outcome rather than simply a predictor variable for other negative outcomes.[30]

Limitations

A major strength of our study was its rich qualitative data source with 190 interviews and a diverse pool of participants. Moreover, the interviews were conducted at multiple time points

when participants were primed to think about wage implications for key aspects of their lives as Seattle's minimum wage policy was implemented. Nonetheless, several important data and research design limitations are worth noting. We used data collected from a relatively small, non-probability sample of workers in Seattle. The sample was diverse along many dimensions, but not statistically representative of workers in low-wage jobs in Seattle or elsewhere. Furthermore, the sample was restricted to adult workers in formal employment (receiving a paycheck), excluding several important and vulnerable groups, such as undocumented and youth workers. In addition, the qualitative component of the SMWS was not designed to examine questions about food access. As such, some interview questions pertaining to food choices were not consistently asked throughout all interview waves, which limits our ability to compare specific individual responses to food-related questions over time. To the extent that participants offered their perceptions on the relationships between resources and food access it was done organically without extensive probing. Finally, this is a descriptive qualitative study aimed at understanding the experiences and perspectives of workers in low-wage jobs. The study was not designed to answer causal questions and none of our findings should be interpreted otherwise.

Conclusions

This study is important for considering how workers in low-wage jobs make decisions about allocating resources, especially income and time, to food acquisition, and how workers view those decisions as connected to health and quality of life. Following low-wage workers over time during Seattle's minimum wage policy phase-in allowed us insights into how this population thought about both theoretical and actual changes associated with wage increases. Although many low-wage workers would like to use additional income to purchase higher quality foods or increase food-related leisure activities, they often perceive tradeoffs with other food acquisition

resources that prevent noticeable differences to food spending patterns. To better understand these tradeoffs, future studies should be specifically designed to examine food choices in response to changes in wages, income, or other risk factors.

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