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Food Insecurity among Unsheltered Homeless People in Fresno, California, with an Emphasis on the Role of Drugs and Other Substances, Disease/Illness, Sleeping Patterns, and Food Consumption. II. A Qualitative Study

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The objective of this study is to examine the role of substance use, disease and illness, inadequate sleep, and 24-hour dietary patterns in food insecurity in Fresno's unsheltered homeless population. We conducted 201 semi-structured interviews and 32 in-depth interviews, and made direct observations of people's behavior and circumstances. Triangulation of the information from these three methods ensured its reliability and credibility. We employed an inductive thematic analysis, which enabled us to identify, analyze, and report complex data. The data were coded and sub-coded around emerging themes and analyzed. The five themes that emerged from the analysis were the cumulative impact of disease/illness, substance use, 24-hour sleeping patterns, multiple substance use, coping behavior, and food security. Whereas the former three themes describe the downward trajectory of food insecurity that is strongly influenced by mental disease, substance use, and personal safety measures, the coping behavior theme identifies both positive and negative behavioral traits and safety-linked factors, and the food security theme describes the beneficial impacts of good health, non-use of substances, self-efficacy, eating at least two meals a day, and sleeping six or more hours. We conclude that the triad of semi-structured interviews, in-depth interviews, and direct observation is a comprehensive information source and inductive thematic analysis is a powerful tool for examining complex food insecurity data, and that the actionable results can inform the development of policies and integrative social and health services aimed at improving the food security of unsheltered homeless people in Fresno.

Keywords: food insecurity, unsheltered homeless people, qualitative study

Introduction

Unsheltered homeless people experience high rates of mental illness, substance abuse, sleep deprivation, and food insecurity, all of which may be interconnected. Food insecurity, defined as "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (Parpouchi, Moniruzzaman, Russolillo, & Somers, 2016), is four times higher in the

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homeless than in the US population (Jackson, Hart, Uribe-Lacy, Yang, & Tsai, 2025). Food insecurity is multi-factorial, but its determining factors are inadequately understood in unsheltered homeless populations. Moreover, the literature on food insecurity among homeless populations is mostly based on medium- and long-term retrospective surveys and narratives (Jackson et al., 2025), and little information is available on short-term food intake. Twenty-four-hour food consumption can reliably identify the types of foods eaten, when they were consumed, and the amounts consumed (National Institute of Health, 2025). They can also help to evaluate the impact of daily eating patterns on health and well-being. Meal irregularity, for example, was found to increase cardiovascular and metabolic risk (Pot, Almoosawi, & Stephen, 2016), obesity, mental illness, and diabetes, and lower productivity among Japanese workers (Tahara et al., 2021). Similarly, inadequate and inconsistent sleep increases the risk of cardiovascular disease and diabetes in adults experiencing chronic anxiety (Richardson et al., 2025). Moreover, depressed people reported decreased appetite associated with insulin resistance and other immune and metabolic upsets (Simmons et al., 2020).

Disease and mental illness are highly prevalent in homeless populations (Meyer, Wyse, & Logani, 2025; Nielsen, Hjorthøj, Erlangsen, & Nordentoft, 2011; Ra et al., 2023). Nevertheless, their access to health services is severely restricted due to logistics, poverty, substance abuse, and administrative impediments (Kogan et al., 2025).

Substance use, including the use of illicit drugs and alcohol dependence, has been associated with food insecurity, physical health, and mental illness (Jackson et al., 2025; Grinman et al., 2010). On the other hand, drug and alcohol use are also widely used to suppress hunger and to stay awake late in the evenings to decrease the risk of assaults and eviction (Gomez, Thompson, & Barczyk, 2010). Higher rates of mental illness, particularly anxiety and depression, chronic diseases, and illicit drug use were reported for unsheltered than sheltered homeless people by Ra et al. (2023) and Richards and Kuhn (2022).

Methamphetamine, now the most widely used drug by homeless people in California (Colliver et al., 2025), is produced in large quantities in Fresno (Cunniff, Cunniff, & Kay, 2008), and is of particular concern because of the lack of treatment for methamphetamine withdrawal, high risk of relapse, increasing craving with long-term use, a wide range of serious health impacts, including the loss of teeth, which impacts food consumption, and its heavy production and use in Fresno (Catchlove et al., 2025; Lah, Rappard, & Clarke, 2021; Vrajová, Šlamberová, Hoschl, & Ovsepian, 2021; Assaf et al., 2025). Marijuana, by far the most commonly used drug by California's general population (Kelleher & Rozier, 2025), was found to be more widely used than methamphetamine among unsheltered people in Fresno (Kloos & Gutierrez, 2026). Used widely for recreation and self-treatment of many health conditions, marijuana dependence is increasingly associated with decreased appetite, depression, anxiety, and insomnia (California Department of Public Health, n.d.). Strong bidirectional associations between smoking, which remains highly prevalent among the homeless, alcohol dependence, and food insecurity were reported by several studies (Kim, Flentje, Tsoh, & Riley, 2017; Reitzel et al., 2020).

Sleep, increasingly recognized as an essential part of health and social functioning, is generally compromised in homeless populations. Major sleep disturbances have been linked with noisy and climatically severe street environments, as well as mental illness of homeless people (Kloos & Gutierrez, 2026; Mahoney III et al., 2014). Insufficient, poor-quality, irregular, and diurnally misaligned sleep may damage physical activity and increase the risk of food insecurity, depression, anxiety, obesity, cardiovascular diseases, and accidents (Mazloomi et al., 2023; Edmed et al., 2025). Sleep deprivation also results in reduced appetite and increased consumption of high-energy foods, with lower consumption of low-energy foods (vegetables and fruits) (Benjamins, Hooge, Benedict, Smeets, & van der Laan, 2021; Greer, Goldstein, & Walker, 2013).

Among people using illicit drugs, inadequate sleep tends to promote use and relapse, and increase daytime sleepiness and accidents (Liu et al., 2026; Roehrs & Roth, 2015).

The objective of this study is to examine the role of disease and illness, substance use, 24-hour food consumption, and 24-hour sleep patterns in food insecurity in Fresno's unsheltered homeless population using an inductive thematic method of analysis. This is, to our knowledge, the first study to use inductive thematic analysis to study food insecurity among unsheltered homeless people.

Analytical Framework

The study's analytical approach (see Figure 1) examines the relationships among food insecurity and illness/disease, use of illicit drugs, 24-hour food consumption, 24-hour sleeping patterns, and inadequate and inconsistent sleep. It also clarifies the objectives by identifying major factors involved in food insecurity. It therefore presents a roadmap for answering the research questions and analyzing the research findings using cumulative risk theory (Hernandez et al., 2019) and rational choice theory (Amadae, 2025). In regard to homeless people's quest for food, the cumulative risk theory claims that the aggregation of risk factors leads to food insecurity (Hernandez et al., 2019), and the rational choice theory can provide a conceptual framework for appraising the costs and benefits of decisions, such as choosing between staying in shelters or on the street (Brallier & Southworth, 2025).

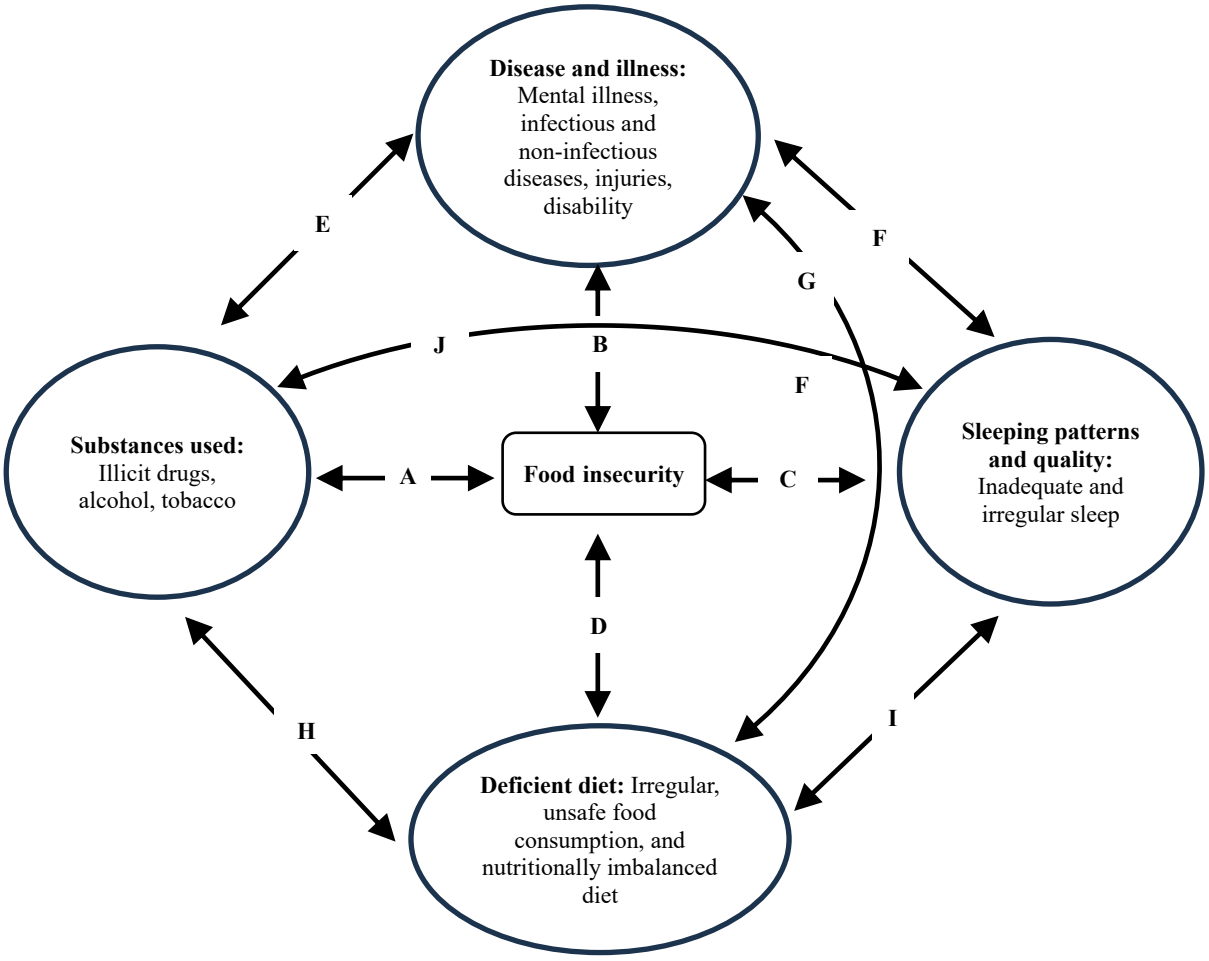

Figure 1. Analytical framework of the study.

All 10 arrows in Figure 1 are bidirectional, revealing strong interrelationships between food insecurity and associated factors. Arrows “A” to “D” show the primary interrelationship between food insecurity and the use of drugs and other substances, disease/illness, inadequate and inconsistent sleep, and inadequate and irregular food consumption, respectively. Arrows “E” to “J” show the secondary relationships between food insecurity and use of substances, illness/disease, inadequate and inconsistent sleep, and inadequate and irregular food consumption.

We distinguish between disease and illness in this paper. Disease is a medical condition diagnosed by medical professionals and characterized by specific causes and symptoms. Illness is subjectively experienced as feeling sick and denotes how a patient reacts to their condition, which may or may not be associated with a particular disease. Mental conditions and insomnia are examples of illnesses (Tubin, 2025). The distinction between disease and illness is further justified because pre-testing of the in-depth questions showed that 83% of the mental illnesses were self-diagnosed.

Materials and Methods

Study Design and Sampling

The authors carried out the study from September 1, 2025 to April 30, 2026, in Fresno, California. During data collection, we considered all unsheltered homeless people who could communicate and were not severely ill. We conducted 201 semi-structured interviews and 32 in-depth interviews with unsheltered homeless people using a pre-tested questionnaire and an audio recorder. Participants were identified at a variety of locations: (a) at major gathering places of homeless people around supermarkets, fast-food store, and restaurants on major traffic routes; (b) at the Poverello House, Fresno Rescue Mission, and Catholic Charities, which offer services to the homeless; (c) in a public library and a community center; and (d) on vacant land along freeways, canals, and railroad tracks. The snowball technique was used to find additional places frequented by the homeless. Prospective persons were asked for their oral consent to be interviewed. We continued the interviews until no new information was found. All persons selected, regardless of whether they agreed to be interviewed, were given a meal or a sandwich, fruits, vegetables, and drinking water donated by local distribution centers of the Central California Food Bank and Catholic Charities, and clothes donated by the Community United Church of Christ.

The Questionnaire

The semi-structured questionnaire consisted of 23 questions, including 7 closed questions about each person’s age and gender; whether they had experienced food insecurity during the month (30 days) preceding the survey, received food stamps or Social Security benefits, or earned money from recycling discarded materials; and their level of education. The 16 open questions asked for each person’s health situation during the month preceding the interview, their use of illicit and prescription drugs during that month for what illnesses and diseases; what benefits and hazards of substance use and abuse they had experienced, how well and how long they had slept the previous 24 hours, if their sleep had been interrupted and why, how often and why they moved between sleeping sites during the previous month, what foods they had eaten during the 24 hours preceding the interviews, and from where they had obtained the foods. The questions for the in-depth interviews focused on verifying and supplementing the data obtained during the general interviews and examined relationships among the variables related to food insecurity.

We pre-tested the questionnaire among 24 individuals, 13 males and 11 females, selected from those living in camps and those living alone in different parts of Fresno. For the in-depth interviews, we selected 32 people willing to discuss their food situation and related issues in detail. They were asked to describe their lived experiences, strategies, and challenges of dealing with disease and illness, the use of drugs, and obtaining enough sleep and food during the 24 hours preceding the interviews. Several questions asked about their adaptive strategies to ameliorate food and water insecurity, personal preferences and attitudes regarding food acquisition and consumption, and logistic and administrative impediments.

The Interviews

The questionnaires were administered to the participants by the authors at the sites where they were found after the purpose of the study had been explained to them and oral permission had been obtained. We used prompts to facilitate the feedback, especially for sensitive questions such as mental illness and the use of substances. Nearly all (93.1%) interviews were conducted in English. Other homeless people translated the 18 interviews with people who spoke only Spanish. All except 19 respondents (91.4%) of the study members completed the interviews.

Data Analysis

We used an inductive thematic analysis, which allowed us to identify, analyze, and report patterns in the data (Bingham, 2023). This is the first study, to our knowledge, that uses inductive thematic analysis to study food insecurity among unsheltered homeless people. After preliminary coding, detailed coding and sub-coding were carried out around emerging themes. Key issues and quotes considered illustrative were identified. All qualitative data from in-depth interviews were organized thematically using emerging themes and analyzed. Data quality assurance: The criteria we used to ensure the quality of the quantitative data were trustworthiness, credibility, and conformity. We used triangulation of interviews, in-depth interviews, and direct observations to ensure the data's reliability and credibility (Noble & Heale, 2019). The information's reliability was also confirmed by using a conceptual construct based on direct observation and in-depth interviews.

Results

More than two-thirds (69.5%) of the 233 participants were males and 30.5% were females. Slightly over one-third (36.5%) had attended only elementary school, 55.8% had attended high school, and 7.7% had attended college. The mean age of males was 39.8 years, and that of females was 36.5 years. Almost four-fifths (78.1%) of the 233 study members reported food insecurity during the month preceding the survey. Among recipients of food stamps and SSI, food insecurity was most common during the second half or third quarter of each month, when these monies had been spent. Each person was, on average, afflicted with 1.48 diseases, and only 14 persons (6.0%) reported being in good health. The five themes emerging from the analysis of the data are described below.

The Cumulative Impact of the Four Factors on Food Insecurity

The interaction among diseases/illnesses, substance use, inadequate and nutritionally deficient food consumption, and inadequate and disrupted sleep with food insecurity emerged as the overarching theme pervading all domains of food acquisition and consumption. More than four-fifths (83.7%) of the study members were reportedly afflicted with disease or illness, on average 1.5 diseases or illnesses per person. By far the largest proportion (60.0%) reported mental illness, mostly anxiety and depression, followed by pain and

missing teeth (12.9%), diabetes and/or cardiovascular disease (8.7%), injuries and wounds (7.3%), and other ailments (7.3%). Half (50.2%) of the mental illnesses were self-diagnosed as anxiety, 46.6% as depression, with the remaining 8 cases representing bipolar disorders, post-traumatic stress bipolar disorder, and schizophrenia. The prevalence of the latter three conditions is probably higher because they are difficult to diagnose.

Anxiety was commonly associated with the stress of finding enough food and safe sleeping places, as well as worries about family members, fear of assaults by other homeless people, and displacement and arrest by police, as well as limited opportunities for improvements in their livelihoods. Depressed people tended to be sad about their situation in the streets away from their families and friends, sorrowful and bitter about broken relationships and poor past decisions, such as using substances and other behaviors leading to imprisonment and social ostracism.

The 190 persons who provided information on sleep slept an average of 4.4 hours the previous night. Slightly more than two-thirds (67.4%) reported sleep interruptions; 22 people (11.6%) slept or were planning to sleep in the daytime, and 20 (10.5%) people had not slept at all the previous night.

The data from the 24-hour dietary recall also show wide variation, especially in the frequency, timing, and types of food eaten. Each person ate, on average, 1.4 meals during that one-day period, mostly in the evening and the following morning; 93 (43.5%) ate a meal the evening before the survey, 88 (40.9%) ate both that evening and breakfast the following morning, 19 (9.4%) ate only breakfast, 16 (8.4%) ate at night and lunch the following day, and 20 (10.5%) ate only lunch.

The Multiple Use of Substances

Nearly 90% self-medicated using illicit drugs, tobacco, or alcohol, and the remaining 17 people used prescription drugs or no treatment. More than 60 people each said they used methamphetamine, a central nervous system stimulant with high addiction potential, marijuana, and cigarettes, the three most commonly used substances by our study group. Methamphetamine, also called “crystal” and “meth”, generates feelings of euphoria and increased energy and alertness but also leads to heart irregularities, strokes, and even death. In our study, methamphetamine was used mainly for energy and to stay awake at night in an effort to thwart theft and physical and sexual assaults, to overcome depression, as well as to stave off hunger, reduce appetite, and manage pain. Pain from sleeping on the ground, arthritis, and injuries were commonly treated with methamphetamine and fentanyl. One 58-year-old man and a number of other people said, “meth keeps me going”.

Most respondents preferred self-treatment over medical treatment. A 42-year-old woman with cerebral palsy said: “I prefer self-treatment with crystal over treatment on the couch or surgery”. Methamphetamine addiction involving daily use was a major factor in chronic loss of sleep. Several heavy users said not to have slept for up to three consecutive nights before “crashing” (falling down). Several hardcore users who used methamphetamine for years said that they had developed tolerance, causing them either to stop using it or to continue using it as a habit. A 49-year-old man who had used methamphetamine for nine years continued using it merely out of habit and had recently started to drink beer to forget bad memories from his divorce. A 36-year-old woman with bipolar disorder said she used methamphetamine to help her get over the highs and lows of that illness. Marijuana was used most commonly as a sedative and analgesic to promote wellness and sleep, especially by people experiencing anxiety, depression, pain, and insomnia. It thus served as a

countermeasure for the effects of methamphetamine. The effectiveness of marijuana as a sedative was indicated by a 36-year-old man who had been incarcerated because of wife battering: “I smoke weed to calm me down and stay out of jail”. Fentanyl was also commonly used as an analgesic, and smoking cigarettes as a sedative. Alcohol, predominantly beer, served primarily as a sedative. Several women said that using marijuana or methamphetamine helped them stay active and mindful by making them more creative and motivated. Similarly, using marijuana, methamphetamine, and fentanyl was said to help overcome boredom.

On the other hand, dependency on and craving these three drugs can lead to stress and loss of sleep. A 37-year-old man who had slept three hours in the early morning said, “I did not sleep more because I was staying up late last night trying to get meth, fentanyl, and weed to prevent getting sick from lack of drugs”. The use of heroin was uncommon. Several people who had been injecting heroin in the past no longer used it after their veins had been damaged and switched to fentanyl or methamphetamine. Among non-substance measures to prevent mental illness and boredom, mindfulness, staying physically and mentally active, and praying were the most commonly reported behaviors, all of which can also help mitigate food insecurity.

Eating Patterns, Adaptive Behavior, and Hunger

The timing of food consumption and the types of food eaten were influenced by numerous factors, primarily the availability of food, sleep-enhancing properties of food, accessibility and financial resources, social relationships, and the availability of food preparation and storage facilities. Thus, the timing of meals rarely followed the three-meal pattern of housed populations.

Most study members ate only dinner during the 24-hour study period. Eating in the evening as late as midnight was a sleep-enhancing strategy. A number of people who did not eat in the evening, said that they woke up hungry. Breakfast was the second most common meal time, with most people skipping midday meals.

A large number of people allegedly had not eaten any food for one to two days, many with the help of water or drugs. The statement of a 54-year-old woman that “As long as I have enough water, I am ok without food”, reflects the widespread experiences in the study population that drinking water, the use of methamphetamine, marijuana, and fentanyl, as well as drinking beer and smoking cigarettes, are useful to reduce appetite and stave off hunger. The effect of these measures was apparent in the study population, where underweight was common, and obesity was relatively uncommon. A 43-year-old man, for example, who had lived on the streets for 14 years, said he had lost 25 pounds during that period, and a 36-year-old woman said, “Although I lost weight since I became homeless, I can sit out hunger because I still weigh 140 pounds”. Similarly, a 66-year-old man whose wallet with his ID card was stolen said, “I lost 20 pounds because of little food since I no longer receive food stamps and SSI. I am now using methamphetamine to forget about this experience”.

Answers to the question about food insecurity during the previous month revealed that people receiving food stamps and SSI ate less and lower-quality food, such as ramen noodles, hot dogs, and snacks, towards the end of the month when these two resources were depleted.

A considerable number of people considered the lack of autonomy as a serious barrier to eating a healthy diet. They tended to focus on what food they could get rather than what was nutritious, even though they recognized the deficiencies of these diets. This also included people who complained about the scarcity of hot meals. The review by Easton, Oudshoorn, Smith-Carrier, Forchuk, and Marshall (2022) describes these and other dietary constraints from different high-income countries.

The great majority of foods, particularly fast foods and snacks, were energy-dense. Snacks were commonly eaten with meals or with water or a soft drink and often constituted the main or sole part of a meal. Financial constraints, limited access to grocery stores and food pantries, and the inability to transport, store, and cook fresh food were cited as major factors in choosing fast food and snacks over regular meals. Fast foods, mostly hamburgers, hot dogs, burritos, tacos, pizzas, and sandwiches, accounted for more than three-quarters of all meals. They were usually consumed with water or soft drinks but virtually never with fresh vegetables or fruits.

Dumpsters were sought out for both fast foods and full meals such as chicken with rice and vegetables, spaghetti dinner, and bacon, eggs, and hash browns. However, "dumpster diving" was considered by many study members as a last resort due to safety hazards and legal concerns. Another source of full meals was housed relatives or friends who occasionally invited their homeless brethren for breakfast or other meals. Snacks (chips, candy, and cookies) were commonly eaten with meals or, together with a drink, often constituted a meal. Water, mostly obtained from hoses, faucets, or hydrants around businesses and residential houses, was the most popular drink. Oranges and tangerines picked from trees constituted the major fruit component of meals.

Coping Behavior

Another theme centers on efforts to stay awake and obtain a minimum amount of sleep, the use of alternative legal and illegal food sources, such as dumpsters, stealing food from stores, teaming up with other homeless people, and frequently changing sleeping sites. The wide range of sleep duration, timing, and quality, as well as efforts to stay awake for security reasons and to sleep at safe times with the aid of substances and food, constituted a continuous struggle. Our interviews revealed the study population's ubiquitous preoccupation with protecting themselves and their belongings, finding safe sleeping places conducive to undisturbed sleep, and maximizing food supply.

Towards those ends, most people used substances to stay awake or fall asleep, as described above; moved daily or every two or three days to find safe sleeping spots; stayed in tents in encampments; joined a companion for protection (especially women); moved to camps; or kept dogs. While keeping dogs provided protection against assaults and theft, they also constituted a major drain on food supplies and often disturbed their owners' sleep. Joining one or more companions and moving to camps increased food security for many people by sharing food. These various measures required much effort and foresight, but were not always feasible or effective. For example, a 37-year-old woman said, "I am drowsy because I slept only two hours last night, but I don't want to go to sleep now because my belongings may be stolen". A 60-year-old man, whose belongings had repeatedly been stolen or confiscated, said, "I have nothing to lose anymore, but at least I can sleep better now whenever I can find suitable, thrown-away stuff to lie on". Awakening during cold and rainy nights, aggressive behavior and theft or attempted theft by other homeless people, and evictions by police and the homeless squad constituted the major sleep interruptions. Staying up and eating late in the evening, sleeping inadequately and erratically, and feeling drowsy and sleeping the next day tended to increase food insecurity by reducing access to food, increasing the use of substances for mental illness, and probably increasing the risk of cardiovascular and other diseases.

Food Security

The fourth theme emerging from the data was the beneficial impact of good health, no substance use, self-efficacy, and at least 6 hours of sleep on food security. Twenty-eight of the 51 people who reported having

enough food during the previous month said that they were in good health, not using drugs or other substances. Most of them had eaten at least 2 meals a day and slept at least 6 hours the night before the interview. The relatively low prevalence of anxiety and depression in this group was underpinned by their tendency to have a positive attitude towards living in the streets, particularly confidence that they would find enough food and a safe spot to sleep, as well as acceptance and even satisfaction with their situation, good resource management skills, and good relations with their relatives. Moreover, most of these people claimed to be Christians. A 46-year-old man said, “It is useless to worry or be sad about life in the streets. I manage my money well, am blessed with good health, and stay away from drugs”. A 62-year-old man who stated that he followed a Christian lifestyle said, “The Lord blessed me with good health and helps me to find enough food, water, and safe sleeping places every day”.

Discussion and Conclusion

This study of food insecurity among unsheltered homeless people in Fresno revealed critical insights into the dynamics and challenges of obtaining adequate food in the austere street environment. The qualitative descriptive study used semi-structured and in-depth interviews, and direct observation, all simple tools that yielded new, actionable knowledge on food insecurity among the homeless. Three of the five themes that emerged from the data—the cumulative negative effects of disease/illness, use of substances, inadequate and disturbed sleep, and inadequate and nutritionally deficient diet, generally exacerbated food insecurity. The interactions between disease/illness, self-treatment with drugs, and inadequate and inconsistent food consumption and sleep were found to put most homeless people on a downward food-security trajectory, in agreement with the cumulative risk theory (Hernandez et al., 2019). The coping behavior theme revealed both positive and negative effects on food security, and the food security theme, characterized by self-efficacy, adaptive behavior, resilience, was associated with a high degree of food security.

These results supplement and expand the findings of our study on food accessibility among Fresno’s unsheltered homeless population (Kloos & Gutierrez, 2026) and other studies. The present study broadens the scope of this genre of studies, most of which considered only 1 to 3 food insecurity factors (Adams et al., 2023; Hernandez et al., 2019; Jackson et al., 2025; Dachner & Tarasuk, 2002; Kim et al., 2017). It is becoming increasingly clear that relationships between environmental factors, resources, adaptive and coping behaviors, and political factors must be understood to effectively reduce and mitigate food insecurity among the homeless (Jackson et al., 2025; Orange County, 2023). Food security, the last theme emerging from the data, was very common in a smaller group. It describes the role of these protective behavioral traits in mitigating food insecurity. Food security, which is understudied among homeless populations and occasionally used interchangeably with food insecurity (O’Campo et al., 2017), is defined by the World Bank Group (n.d.) as the physical availability of enough food, economic and physical accessibility to food, diversity of the diet, and sustainability of these three dimensions. This theme, which revealed considerable evidence for the beneficial roles of good health, abstinence from substances, adequate sleep, self-efficacy, and resilience, may help develop a roadmap towards achieving higher levels of food security among unsheltered homeless people in Fresno.

We conclude that the triad of semi-structured interviews, in-depth interviews, and direct observation is a comprehensive information source and inductive thematic analysis is a powerful tool for examining complex food insecurity data, and that the actionable results can inform the development of policies and integrative social and health services aimed at improving the food security of unsheltered homeless people in Fresno.

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