



Food Insecurity Among Hospital Outpatients: Prevalence, Screening and What Departments Can Do About It

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Abstract

Detection is not the difficulty here. A two-item screener validated against the eighteen-item reference module in 5,039 respondents returned 96.7 per cent sensitivity and 86.2 per cent specificity, takes under a minute and has been validated across diverse populations. What it finds depends on where it is applied: food insecurity affects more than 12.8 per cent of households nationally, above 20 per cent of emergency department attenders, 24 per cent of 426 hepatology outpatients at a tertiary centre, and 74 per cent of patients at student-run free clinics. In the hepatology cohort, dependent alcohol intake, alcohol-related liver disease, cirrhosis and depression all predicted insecurity. The weak point sits after the positive result: in one programme, 12.5 per cent of those not using the referral had lost it or did not recall receiving it.

Keywords: Food insecurity; Screening; Hospital outpatients; Referral; Health inequalities

Introduction

Food insecurity, defined by limited or uncertain access to adequate food arising from financial constraint, affects more than 12.8 per cent of households in the United States and disproportionately affects marginalised populations [1,2]. Health services increasingly screen for social risks including food security, housing stability and social isolation [3].

Hospital departments occupy an unusual position in this. They see people who may have no other regular contact with services, and they see them at moments when other things are being asked and recorded [1,4]. Whether that opportunity is used depends on whether screening is built into the encounter.

This review examines how common food insecurity is among patients attending hospital, how well the available screening instrument performs, what happens after a positive result, and what departments have actually implemented.

Objective

This review sets out to establish four things from the published literature. First, reported prevalence across hospital and clinic settings and how far it varies. Second, the performance of the screening instrument in use. Third, which clinical characteristics predict insecurity in an outpatient population. And fourth, what happens between a positive screen and a patient receiving food, since that is where implementation succeeds or fails.

Literature Review

How much depends on where you look: Reported prevalence varies by an order of magnitude across settings (Figure 1). Food insecurity affects over 12.8 per cent of households nationally [1]. Rates above 20 per cent have been reported among emergency department attenders in both paediatric and adult hospitals [1,5]. A cross-sectional study of consecutive patients attending hepatology outpatient services at a tertiary centre identified 103 of 426 patients, or 24 per cent, as food insecure [6]. In student-run free clinics, 318 of 430 patients screened, or 74.0 per cent, were food insecure [7].

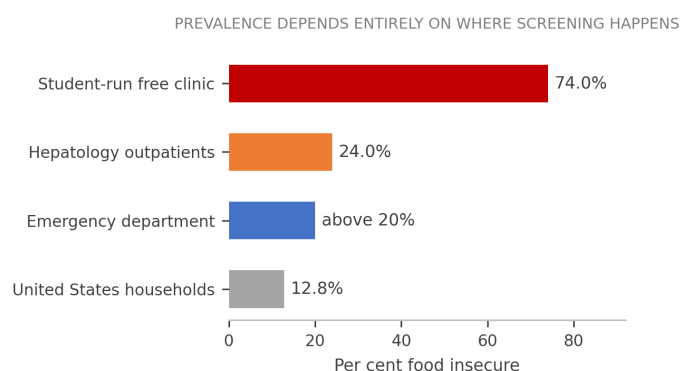


Figure 1: Prevalence depends entirely on where screening happens [1,5,6,7]

The instrument: The two-item screener asks whether, within the past twelve months, the respondent worried that food would run out before there was money to buy more, and whether the food bought did not last with no money to get more (Figure 6). A household is identified as at risk if either answer is sometimes or often true [5,8].

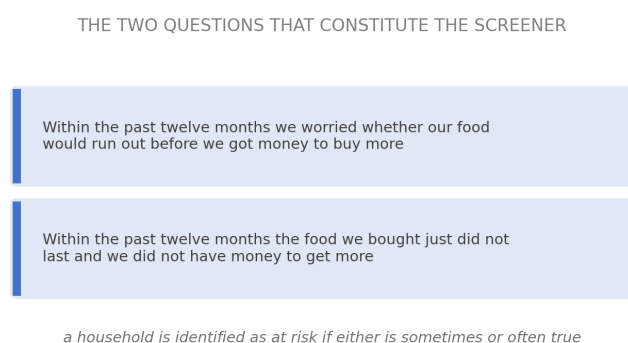


Figure 6: The two questions that constitute the screener [5,8]

How well it performs: Tested against the eighteen-item household food security survey module in cross-sectional surveys of 5,039 caregivers across emergency department and primary care sites, sensitivity was 96.7 per cent and specificity 86.2 per cent (Figure 2) [5]. The instrument has been validated for accuracy across diverse populations including families with children, older adults, Black and Hispanic individuals, immigrants, people with disabilities and low-income households [8].

Table 1: Reported prevalence by setting, as published

THE TWO-ITEM SCREENER AGAINST THE EIGHTEEN-ITEM MODULE

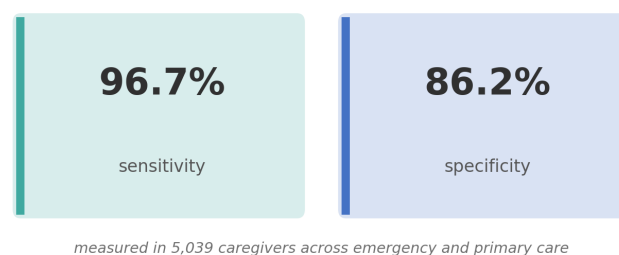


Figure 2: The two-item screener against the reference module [5]

Setting	Denominator	Food insecure
United States households	National estimate	Over 12.8% [1]
Emergency department	Adult and paediatric	Above 20% [1,5]
Hepatology outpatients	426 screened	103, or 24% [6]
Student-run free clinics	430 screened	318, or 74.0% [7]

Who is affected in an outpatient clinic: In the hepatology cohort, logistic regression identified high-risk or dependent alcohol intake as the strongest predictor with an odds ratio of 2.7 (95% CI 1.1 to 6.8, $p = 0.03$), followed by alcohol-related liver disease at 1.9 (1.1 to 3.1, $p = 0.02$), depression at 1.7 (1.1 to 2.8, $p = 0.023$) and cirrhosis at 1.6 (1.1 to 2.6, $p = 0.03$) (Figure 4) [6]. Both screening tools used in that study concern food insecurity arising specifically from financial constraint [6].

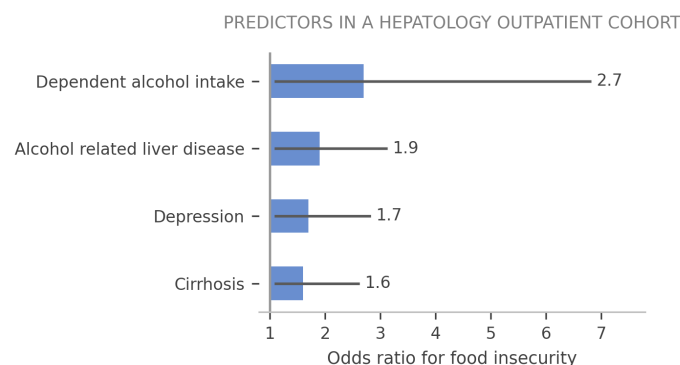


Figure 4: Predictors of food insecurity in a hepatology outpatient cohort [6]

What implementation looked like: In three student-run free clinic sites, all patients were screened using a six-item survey between January and July 2015 and referred to appropriate resources. The screening rate was 92.5 per cent, or 430 of 463 patients, of whom 318 were food insecure including 132, or 30.7 per cent of those screened, with very low food security (Figure 3) [7].

What patients received: A registry and referral tracking system showed that by the following January, 201 participants were receiving monthly boxes of food on site, 66 were using an off-site food pantry and 64 were enrolled in a supplemental nutrition assistance programme (Figure 5) [7]. The authors observe that prevalence in this population was remarkably high yet remained largely unknown until the programme was implemented [7].

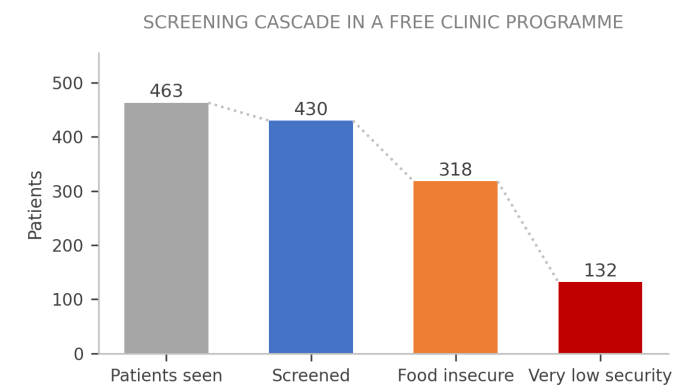


Figure 3: Screening cascade in a free clinic programme [7]

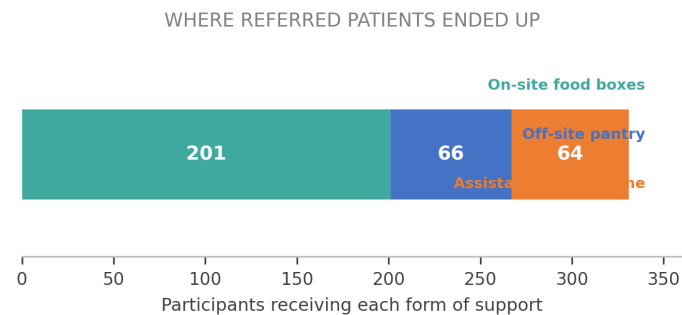


Figure 5: Where referred patients ended up [7]

Where referral breaks down: An emergency department programme screening from 2018 to 2024 enrolled patients who screened positive, issued a food assistance guide and followed them at three and six weeks. Among those who did not use the guide, 12.5 per cent cited losing the referral or not recalling receiving it, which the authors identify as pointing to a need for more reliable delivery of assistance information [1]. Approaches described as increasing access include tailored home delivery of grocery bags, meal delivery programmes for older people, and food prescription programmes in outpatient clinics [1].

Testing a direct provision model: A prospective cohort at a county-funded emergency department screened consecutive adults on weekdays and issued those screening positive with a uniquely numbered thirty-dollar voucher redeemable at the hospital's co-located food market, with redemption tracked through market receipt records at thirty-day intervals [9]. Hospital-based prescriptive food services have been proposed as a way to bridge the gaps identified in referral-based models [1].

Table 2: Implementation findings across the reviewed programmes

Element	What has been reported
Screening rate achievable	92.5% in a free clinic programme [7]
Sensitivity of the instrument	96.7% against the reference [5]
Referral lost or forgotten	12.5% of non-users [1]
Support received at follow-up	201 on-site, 66 pantry, 64 programme [7]
Direct provision tested	Voucher redeemable on site [9]

What is not yet standardised: There are currently no universally recommended questions to accompany the screener in order to

identify patients who are nutrition insecure as distinct from food insecure, and protocols for referral once a patient screens positive are described as needing to be in place rather than as established [3]. Implementation guidance recommends that hospitals establish standard methods and infrastructure, document needs in the health record, and incorporate screening into electronic systems to enable a streamlined referral [8,10].

Why it matters clinically: Food insecurity is associated with chronic disease among low-income participants in national survey data [13] and with health outcomes more broadly [12]. Patients trade one necessity against another: cost-related medication underuse and unmet needs cluster with food insecurity [14], and health care expenditure is higher among food-insecure adults [15]. Frequent emergency department use has been examined in relation to it directly [25], as have food security, health and medication expenditure among department attenders [26,27].

The instrument and its origins: The two-item screen was developed and validated to identify families at risk [11], and diagnostic accuracy of the screeners recommended for health care settings has been compared directly [5]. A professional body issued a policy statement recommending screening and referral in 2015, though it did not address emergency departments [16]. Screening in paediatric primary care and in suburban practice has been evaluated separately [20,21,23], including a randomised trial of screening in the emergency department [24].

Barriers on both sides of the encounter: Avoiding stigma when screening for social determinants has been studied directly [19], and clinicians perceptions of screening in practice examined [20]. Opportunities and barriers in paediatric clinical settings have been described [21], along with the successes, challenges and considerations involved in integrating referral rather than screening alone [22].

What interventions have achieved: Systematic review has examined interventions addressing food insecurity in health care settings [17] and interventions on social and economic needs more generally [18]. Receipt of a medically tailored meal programme has been associated with reduced health care use [28], and a food bank intervention providing diabetes-appropriate food improved glycaemic control across three states [29]. The framing of food as a component of medical care has been set out in policy terms [30,31], and interventions to address household food insecurity in high-income countries reviewed [32]. Prevalence measured by standardised scales and its association with mental health have been reported outside the United States as well [33,34].

Table 3: What is and is not established about screening in this setting

Question	What the evidence supports
Can it be detected reliably?	Yes, 96.7% sensitivity [5]

Is screening deliverable?	92.5% rate achieved [7]
Does referral reach the patient?	Often not; 12.5% lost it [1]
Does screening change food security?	Not established [1,7,9]
Is it associated with health?	Chronic disease and cost [12,13,14]

Method

Search strategy: PubMed and the archives of the major public health, emergency medicine and clinical nutrition journals were searched for studies of food insecurity screening in hospital and clinic populations. Search terms combined food insecurity with screening, Hunger Vital Sign, outpatients, emergency department and referral. Reference lists of the emergency department programme report [1] and the free clinic implementation [7] were screened by hand for primary sources.

Eligibility: Studies were included if they reported prevalence of food insecurity in a defined health service population, evaluated a screening instrument, or described implementation of screening with referral. Implementation guidance documents are cited for their recommendations and identified as such.

Data extraction and handling: Setting, population, the instrument applied, the threshold for a positive result and the reported figure were extracted as published. The instrument and setting are stated alongside every prevalence figure, because estimates range from under 13 to 74 per cent across the studies reviewed and almost all of that range is attributable to which population was screened rather than to the measure used. This review reports published findings and does not constitute guidance on the assessment or support of any individual patient, nor advice on income, benefits or food assistance, which are matters for the treating team and relevant local services. No pooling or re-analysis was performed. Figures 1 to 6 and Tables 1 to 3 reproduce published values only. This is a narrative synthesis of published literature and was not registered as a systematic review.

Concluding Remarks

The screening instrument is not the obstacle. Two questions, under a minute to ask, 96.7 per cent sensitivity against an eighteen-item reference standard, validated across families with children, older adults, immigrants, people with disabilities and low-income households [5,8]. Few clinical screening tools in routine use perform that well, and none of the barriers described in this literature concerns the accuracy of detection.

The prevalence range is the finding most likely to be misread. Estimates run from over 12.8 per cent of households to 74 per cent of free clinic attenders [1,7]. That is not measurement error and it is not a reason to distrust the figures; it reflects that food-insecure people concentrate in particular services. A department quoting a national figure to estimate its own caseload

will underestimate it, sometimes severalfold [6,7].

The hepatology finding deserves attention because it is the clearest outpatient example. Twenty-four per cent of consecutive attenders were food insecure, and the predictors were dependent alcohol intake, alcohol-related liver disease, cirrhosis and depression [6]. Every one of those is already documented in the notes of the clinic doing the screening. The information needed to identify a higher-risk group is present before any questionnaire is administered.

The remark that prevalence remained largely unknown until the programme was implemented is the most quietly damning sentence in the reviewed literature [7]. Seventy-four per cent of a clinic population were food insecure and the service did not know. The condition is invisible without asking, and it does not present as a complaint.

Where the effort should go is downstream. A screening rate of 92.5 per cent was achieved in a clinic programme, so the screening step is demonstrably deliverable [7]. But 12.5 per cent of those who did not use their referral had lost it or did not recall receiving it [1], which is a failure of information transfer rather than of intent, and handing a patient a leaflet in an emergency department is a weak mechanism for a problem that recurs weekly.

The models that appear to work share a feature: they shorten the distance between the positive result and the food. On-site monthly food boxes reached 201 participants against 66 using an off-site pantry [7], and the voucher study issued something redeemable in the same building [9]. Whether that difference reflects the model or the population is not established by these studies, but the direction is consistent with what the referral failure data would predict [1,7].

Three limitations belong with these conclusions. Prevalence figures derive from different instruments with different thresholds, including two-item, six-item and eighteen-item measures, and are not strictly comparable [5,6,7]. The instruments in use address insecurity arising from financial constraint specifically and do not capture difficulty in obtaining food for other reasons [6]. And none of the programmes reviewed reports whether screening and referral changed food security status at follow-up compared with no programme, so the evidence establishes feasibility rather than effectiveness [1,7,9].

There is a distinction the instruments do not currently make. Food insecurity as measured here concerns access constrained by money [6]. Nutrition insecurity, meaning consistent access to food that supports health rather than food in general, has no agreed accompanying questions [3]. For a nutrition service the second is closer to the question actually being asked, and it is the one for which no validated screener exists [3,31].

A practical caution belongs alongside the case for screening. Asking about running out of food is intrusive in a way that

asking about symptoms is not, and stigma when screening for social determinants has been studied precisely because it affects whether patients answer honestly [19]. Clinicians own reservations about asking have also been documented [20,21]. A programme that screens without a route to help risks asking a difficult question and offering nothing [22].

What the field has not shown is the thing that would justify the effort. Feasibility is established: high screening rates, an accurate instrument, several delivery models tested [1,5,7,9]. Effectiveness is not, since no reviewed programme compares food security at follow-up against no programme [17,18]. Adjacent evidence is more encouraging, with medically tailored meals associated with reduced health care use and a food bank intervention improving glycaemic control [28,29], but those test provision rather than screening [17,30].

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Conflict of Interest

The authors declare no competing interests.

Ethics Statement

This article reviews previously published studies only. No new patient data were collected and no participants were recruited, so ethical approval was not required.

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