

Food Insecurity in Relation to Changes in Self-Efficacy, Nutrition, and Hemoglobin A1c during a Diabetes Educational Intervention

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Background: Food insecurity refers to being at risk of going hungry because of the inability to afford food. It is a way in which poverty may predispose individuals to poorer diabetes management, as patients may shift their dietary intake toward inexpensive, calorically-dense foods. While previous, cross-sectional analyses have shown an association between food insecurity and worse glycemic control and diabetes self-management, this study uses longitudinal data to assess food insecurity in relation to changes in self-efficacy, nutritional intake, and glycemic control. We hypothesized food insecure individuals would have worse outcomes over time.

Methods: The dataset is from the Missouri Health Literacy and Diabetes Communication Initiative, conducted in 2008-2009. We enrolled 621 patients with diabetes from urban, suburban, and rural safety net sites into a trial evaluating a low-literacy diabetes guide for self-management support. Two thirds received a defined intervention designed to engage patients in setting feasible diabetes action plans, and remaining patients received usual diabetes care. In this study, we conduct a secondary analysis of baseline food insecurity (6-item scale dichotomized into food secure vs. food insecure) in relation to several outcomes over 1 year. We compared unadjusted differences of diet and diabetes self-efficacy (scales scored 1-5), fruit and vegetable consumption (# per day), and glycemic control (A1c) by food insecurity status at each time point using two-sided t-tests. Adjusted differences by food insecurity over time were examined using generalized estimating equations, clustering on individual and controlling for time, age, gender, race, income, and intervention arm, as well as an interaction between time and food insecurity.

Results: 35% (n=214) of the diabetes sample reported being food insecure. These participants were younger, with less income, and were more likely to be current smokers and unemployed. At baseline, food insecure individuals had higher A1c as well as lower diet and overall diabetes self-efficacy and fruit and vegetable consumption compared to food secure individuals (Table). Food insecure individuals had significantly greater improvements in A1c (reduced on average by 0.39%), diet self-efficacy (increased by 0.23), and diabetes self-efficacy (increased by 0.26) over time (interaction terms: $p < 0.05$). This improvement for food insecure individuals resulted in no significant difference in A1c between the groups at follow-up.

Conclusions: As expected, individuals experiencing food insecurity were more likely to begin this study with poorer measures of self-efficacy, nutritional intake, and glycemic control. However, contrary to our hypotheses, food insecure patients made significant improvements on A1c and self-efficacy over time. This finding may suggest that food insecure patients are particularly sensitive to diabetes self-management support.

Detecting and measuring deprivation in primary care: development, validity and reliability of a self-reported questionnaire - the DiPCare-Q

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Background: General practitioners play a central role in taking deprivation into consideration when caring for patients in primary care. Social environment and the subjective social and individual conditions of life affect health by enhancing stress and diminishing material means to fight against affections. Validated questions to identify deprivation in primary-care practices are still lacking. For both clinical and research purposes, this study therefore aims to develop and validate a standardized instrument measuring both material and social deprivation at an individual level.

Methods: The Deprivation in Primary Care Questionnaire (DiPCare-Q) was developed using qualitative and quantitative approaches between March 2008 and April 2011. A systematic review identified 199 questions related to deprivation. Using judgmental item quality, these were reduced to 38 questions. Two focus groups (primary-care physicians, and primary-care researchers), structured interviews (10 laymen), and think aloud interviews (eight cleaning staff) assured face validity. Content validity was evaluated by six experts in the field of social medicine, and 17 primary-care physicians. Item response theory analysis was then used to derive the DiPCare-Q index using data obtained from a random sample of 200 patients. Patients completed the questionnaire a second time over the phone three days later to enable us to assess reliability. For construct and criterion validity, the final 16 questions were administered to a random sample of 1,898 patients attending one of 47 different private primary-care practices along with questions on subjective social status (subjective SES ladder), education, income, and welfare status.

Results: Deprivation was defined in three distinct dimensions; material deprivation (eight items), social deprivation (five items) and health deprivation (three items). Item consistency was high in both the derivation (KR20=0.827) and the validation set (KR20=0.778). The DiPCare-Q index was reliable (ICC=0.847), and items were relevant (Table). The DiPCare-Q index was correlated to patients' estimation of their position on the subjective SES ladder ($r_s=0.539$). This position was correlated to both material and social deprivation independently suggesting two separate mechanisms enhancing the feeling of deprivation.

Conclusions: The DiPCare-Q is a rapid, reliable and validated instrument useful for measuring both material and social deprivation in primary care. Compared to commonly used socio-economic determinants, these questions are better social indicators of patients' perceptions of themselves. Questions from the DiPCare-Q are easy to use when investigating patients' social history and could improve clinicians' ability to detect underlying social distress related to deprivation.

Social Determinants of Primary-care Patients Forgoing Health Care in the Swiss Cost-sharing System

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Background: Consequences of out-of-pocket expenses causing health disparities can be addressed by primary-care physicians in complement to upstream reforms focused on social determinants of health. By considering social conditions in clinical decision-making, primary-care physicians can address mismatches between patients' health care needs and financial abilities. The aim of this study is to identify and model social determinants explaining patients' decisions to forgo health care for economic reasons, and investigate whether questioning patients' subjective perception of their social situation is more relevant than recording objective socio-economic status (SES).

Methods: This Swiss primary-care practice cross-sectional survey questioned a random sample of 2,025 patients over 16 years of age attending one of 47 private primary-care practices in western Switzerland between September 2010 and February 2011. Patients concerned by health care renunciation were those who reported a household member not to have sought treatment for economic reasons during the previous 12 months. For subjective social determinants, patients were questioned on their state of deprivation (DiPCare-Q), their subjective social status (subjective SES ladder), and state of health (EQ-5D). We also collected objective socio-economical determinants (age, gender, nationality, education level, daily income, and household's source of income). Using regression analysis and coefficients of determination (R^2), we compared the load of self-perceived subjective social determinants to the load of objective socio-economic determinants in explaining the decision to forgo health care. Likelihood ratio test was used to assess significant level of observed differences.

Results: During the 2,945 monitored random consultations, physicians saw 2,811 different patients of which 2,025 were included in the analysis (response rate 72%). Among them, 10.7% (CI95% 9.4 to 12.1) were concerned by restricted health care during the 12 previous months. Forgoing health care was independently explained by level of material deprivation, social deprivation, subjective social status, health status, daily income, and source of income (related to age). Questioning patients on their subjective perceived state of material deprivation was more relevant in explaining their decision than collecting objective socio-economical status ($R^2= 0.226$ vs. 0.097 ; $P<0.0001$), which nevertheless remains better than having physicians estimate their patient's subjective social status ($R^2=0.029$; $P<0.0001$).

Conclusions: Firstly, financial difficulties, social isolation, chronic conditions, mental disorders, and younger age favor forgoing health care. This model is however limited to households for which at least one member attends a primary care physician, and does not explore other, non-economic, reasons for not accessing healthcare. Secondly, during social history, physicians are recommended to favor questioning their patients on subjective perceived social conditions over common socio-economic determinants to detect underlying social risks of restricting access to health care. This seems particularly important in developed countries given the current increase in the number of patients concerned by rapid changes in their socio-economic situation.

The Feasibility of Integrating Diabetes Education with Community Partnerships

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Background: Identifying effective interventions to improve diabetes self-management and outcomes among African-Americans is a national priority. Tailoring diabetes self-management interventions to the culture and practical needs of urban African-Americans has been shown to be effective. Nevertheless, few diabetes education interventions incorporate local community resources. We piloted diabetes education integrated with community partnerships. Our aim was to develop effective partnerships with local food organizations to support newly educated and empowered diabetes patients. We sought to assess the feasibility and preliminary effectiveness of this integrated approach to classroom and community-based education.

Methods: Patients participated in 10 weeks of culturally-tailored diabetes education at a clinic on Chicago's South Side. Participants learned diabetes self-management, patient activation communication skills, and tips on healthful eating. Community-based grocery store tours taught hands-on skills identifying healthy choices. Partnerships with food organizations linked participants to affordable healthy food: gift cards were donated by a local food retailer in tandem with a store tour; participants were directed to a farmer's market where LINK dollars were doubled; free fresh produce was given to participants at a food pantry, along with healthy recipes, nutrition advice, and free exercise lessons. Changes in clinical outcomes, diabetes self-management and self-efficacy were measured pre, post, and three months following the class (six months post-intervention data is currently being collected).

Results: All patients were African-American; the mean age was 66 years. The majority was female (88%), and the annual household income was <\$25k. All participants attended at least half the classes; 86% attended at least 70% of the classes. All patients "strongly agreed" that they were satisfied with the program.

Participants experienced improvements in clinical outcomes, diabetes self-efficacy and self-management, including reported nutrition patterns. The mean HbA1c of participants improved from 8.2% pre-intervention to 7.3% three months post ($p=0.021$). Self-efficacy improved in all patients, including confidence in diabetes management ($p=0.047$), feeling capable of handling their diabetes ($p=0.011$), and feeling capable of doing routine care ($p=0.002$). Improvements were observed in the mean number of days/week participants ate 5+ servings of fruits and vegetables (4.3 vs. 4.9, $p=0.041$), inspected their shoes (2.8 vs. 5.6; $p=0.003$), and monitored their glucose (4.6 vs. 5.6; $p=0.047$). Participants anecdotally expressed appreciation for the resources offered by the community partnerships.

Conclusions: We aimed to assess the feasibility of integrating community partnerships into diabetes education, and the effectiveness of a program thus tailored to the culture and pragmatic needs of urban African-Americans. The partnerships proved feasible, and the education effective. Educated participants are ready and willing to eat healthily, but they need support to do so. Incorporating community partnerships that offer discounted/free fresh produce and/or guidance in healthy food choices anchors new nutrition information and relates it to the everyday logistical, financial, and personal realities of patients. Integrating diabetes education with community partnerships has great potential to support patients as they work to sustain healthy behavior change.

Discount food stores in high disadvantage Los Angeles County neighborhoods explain most individual difference in body mass index (BMI)

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Background: Poor diet and physical inactivity is the second leading cause of mortality in the US after smoking. Cross-sectional, ecologic studies have associated specific obesogenic food environments (OFE examples: smaller distance to fast food restaurants, higher counts of fast food per population, larger distance to grocery stores, lower counts of grocery stores per population) to higher rates of poor diet or higher body mass index (BMI). These OFEs are more prevalent in some low-income and racial/ethnic minority neighborhoods potentially contributing to widening health disparities. Recent analyses of two longitudinal cohorts (CARDIA; Framingham Offspring Cohort), found no associations between ecologic measures of OFEs and poor diet or BMI, possibly because they do not capture the characteristics of the OFEs associated with poor diet or BMI. We assessed the hypothesis that current ecologic OFE measures do not capture the link between food environments and BMI because they ignore variability in food store types and ignore actual distance traveled to purchase food. Populations defined by store type or distance may better describe the potential causal link.

Methods: The Los Angeles Family and Neighborhood Survey (LAFANS) is a longitudinal cohort of 2619 households in Los Angeles County. In 2001-2002, households were asked where they shopped for groceries, (store name and location), self-reported BMI and details of household structure and resources. A six-category food environment measure based on store name and frequency was developed: high-frequency (HF) English-language named stores ("major chain"), discount stores ("less, "value", etc. in the name), HF Spanish-language stores, English-language specialty stores, multi-purpose or bulk purchase stores, other HF stores, and other low frequency stores of any language. We analyzed associations of this food environment measure with self-reported BMI, controlling for individual and household characteristics.

Results: Of all LAFANS households, 2297 (88%) reported both BMI and a valid store name. In Los Angeles County, 37% of households shop at the nearest grocery store, the remaining bypass an average of 13 stores, and 13% shop in their home census tract. The median distance to store is 1.12 mi (IQR 1.32), and the distribution of shopping by concentric radii of <1, 1-2.99 and 3 to 4.99 km, is 28%, 46%, 16%. Adjusting for individual, household and neighborhood characteristics, discount store shoppers have substantially higher BMI than the referent group, major chain store shoppers in low disadvantage neighborhoods (BMI difference 1.40 points, 95% CI 0.62 - 2.18, $p = 0.004$), equivalent to a weight difference of 8.4 lbs. for an individual of median height and weight (5'5", 160 lbs.).

Conclusions: Distinguishing between store types may better describe the causal link between individuals, stores and BMI than ecologic measures. In L.A. County, discount stores, found almost exclusively in high disadvantage and racial/ethnic minority neighborhoods are associated with individual differences in BMI. Further research should assess whether the association between discount stores and BMI is related to unmeasured elements of store content or individual characteristics. Current policy efforts focused on modifying small markets or building major chain stores in high disadvantage neighborhoods may inadequately address food environment based racial/ethnic and income based health disparities in BMI.

Using Photovoice to identify interventions to improve mental health among recent Latina immigrants

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Background: Latino immigrants face numerous social, economic, and political challenges as they navigate transition to life in the United States. Disparities in mental health outcomes and quality of life compared to non-Latinos are well documented, yet access to health care and mental health services is limited. We used Photovoice to elicit the perspectives of Latina mental health promotoras on barriers to well-being among their peers and to identify possible interventions to improve mental health.

Methods: Amigas Latinas Motivando el Alma (ALMA) is an academic community partnership to improve mental health among immigrating Latinas. Promotoras completing the ALMA stress reduction training served as partners using Photovoice. Through photography and guided discussion, promotoras recorded and reflected on community strengths and concerns regarding mental health. Discussions were audio recorded, transcribed, and coded using content analysis to identify salient themes. Promotoras reviewed codes for verification (member checking) and development of themes that were presented by the promotoras in a community forum.

Results: Nine Promotoras aged 30 to 43 participated in Photovoice. The women have lived in the US for an average of 10 years (range 3 to 17) and most are from Mexico (78%). Two-thirds are currently employed and 44% have a college degree while 22% did not attend high school. The promotoras identified three interrelated themes that impact the mental health of newly immigrating Latinos.

- 1) Intergenerational tension that challenges communication between parents and children. Tension stems from concern about loss of values and acculturation, the division between foreign-born parents and their US-born children, and time constraints.
- 2) Limited education and employment opportunities. While many came to the US for work, participants voiced concerns about factors such as low educational attainment, limited English proficiency, lack of recognition of degrees obtained outside of the US and immigration status that limited work opportunities.
- 3) Language barriers and cultural isolation. In this emerging and rapidly changing immigrant community, exposure to only Spanish-language social networks and media sources was felt to limit knowledge of and access to resources. Physical barriers such as lack of transportation (complicated by immigration status) and distance from family and friends, as well as racial tension among other minorities were also discussed as factors increasing isolation.

Over 70 stakeholders attended the community forum and proposed the following in response to the themes that were presented: increasing awareness of mental health resources through partnerships with Spanish-language media, churches, and businesses; school programs that foster involvement of Latino parents; and workshops to train community leaders and more promotoras to address the stigma around mental illness in order to increase utilization of existing mental health services.

Conclusions: Photovoice is an effective tool to give Latina women with limited English proficiency and other vulnerable populations a platform to inform interventions designed to improve community health.