7-12-2023

Screening for Food Insecurity in a Suburban Pediatric Urgent Care

Rachel Foutz
University of Missouri-St. Louis, rcr4d@umsystem.edu

Screening for Food Insecurity in a Suburban Pediatric Urgent Care

Rachel Foutz

B.S.N.. Goldfarb School of Nursing at Barnes-Jewish College, St. Louis, MO,

2016

A Dissertation Submitted to The Graduate School at the University of Missouri-

St. Louis in fulfillment of the requirements for the degree

Doctor of Nursing Practice with an emphasis in Pediatric Nurse Practitioner

August 2023

Advisory Committee

Elise Schaller, DNP, MHA, APRN, CPNP-PC
Chairperson

Roxanne Reid, DNP, MSN-Ed, RN

Thuylinh Pham, MD FAAP

Screening for Food Insecurity in a Suburban Pediatric Urgent Care

Food insecurity (FI) is a significant health issue effecting millions of infants, children, and adolescents in many different communities across the United States. Children with FI are at risk for experiencing adverse health outcomes due to inadequate quality and quantity of food. FI can have serious academic, social, and physical health consequences for children. Children who live in households suffering from FI are more likely to be sick more often, recover slower from illnesses, and are hospitalized more frequently (American Academy of Pediatric [AAP], 2022). FI can also have a negative impact on a child's developmental outcomes effecting working memory, interpersonal skills, and externalizing behaviors (Grineski et al., 2018). In the United States, one in seven children live in a food insecure household (AAP, 2022). Given the prevalence adverse outcomes due to FI, children should be screened frequently for FI throughout their childhood

The AAP recommends screening children for FI at their well child visits. In the state of Missouri, many children do not have primary care providers (PCP) or do not attend their well child checks on a regular basis. Only 58.1% of children aged three years to six years attended their well child visits; the national average is 70.4% (Children's Health Report Card, 2022). Many families, especially those who are Medicaid beneficiaries, utilized Emergency Departments (ED) and urgent cares for primary care health problems (Gattu et al., 2019). In many of these

settings, FI screenings are not being done and therefore children are never being screened for FI. A study done by Gattu et al (2022) showed pediatric EDs serve as a safety net for FI screening in the pediatric population. Therefore, pediatric specific urgent cares should as well.

Having the ability to screen for FI in a timely and evidence-based manner is critical. The Hunger Vital Sign (HVS) is a two-statement screening tool used to screen for FI and was validated by the AAP in 2015 for use in the pediatric population. The HVS is comprised of two statements: *Within the last 12 months we were worried whether our food would run out before we got money to buy more* and *Within the past 12 months the food we bought just didn't' last and we didn't have money to get more* (Children's Health Watch, 2022). If the caregivers' response is "often true" or "sometimes true" it is considered a positive screen. The HVS can be completed in a timely manner and allows for screenings to be completed verbally or electronically. Being able to complete it electronically allows for more privacy for the family and studies show caregivers are more likely to be honest with their answers if they do not have to answer verbally (Barnidge et al., 2020).

In a suburban pediatric urgent care, there is an opportunity to screen children for FI due to a significant number of patients not having a PCP and due to the percentage of children who do not attend their well-child checks in the state of Missouri. The framework chosen for this project is the Institute for Healthcare

Improvement (IHI) model for improvement using the four step Plan-Do-Study-Act (PDSA) cycle. The purpose of this quality improvement (QI) project is to implement a FI screening tool in a pediatric urgent care. The aim of this project is for 70% of patients entering this urgent care to complete a FI screening within a one-month period. The primary outcome measure is the completion of the screening tool. The secondary outcome measures are prevalence of FI, demographics associated with FI, and association between FI and the child having a PCP. The question for this study is: In children aged two days to 21 years of age, what are the results of implementing the HVS screening tool in a pediatric urgent care on identifying children living with FI?

Review of Literature

A literature search was completed to examine the need for FI screening tool being utilized outside of primary care and the negative effects FI can have on the pediatric population. To conduct this search, The Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed databases, and the American Academy of Pediatrics database. This literature search was conducted with the key terms and phrases *food insecurity, children, pediatrics, screening, pediatric food insecurity, food insecurity screening, screening tools,* and *health outcomes.* Boolean operators used were AND and OR. The initial search warranted 12, 370 publications. Inclusion and exclusion criteria were then applied. Inclusion criteria included publications from 2017-2022, published in

English language, included children aged one month to 18 years of age, and had

full-text links available. Exclusion criteria included publications before 2017, age

greater then 18 and those not published in English language. After application of

inclusion and exclusion criteria, 436 publications resulted. After review of

abstracts and terminology, 11 studies were included in this literature review.

Screening and providing resources for FI in the United States is something

that should be done regularly at a child's primary care office. Due to many

children not having PCPs or do not regularly attend well-child checks so the

opportunity to screen them is never presented. There is a need for FI screening to

be done outside of the primary care setting to ensure all children are being

screened. Two studies showed there was a need for FI screening to be conducted

in pediatric ED's. Both were conducted in pediatric EDs, used an anonymous

survey, and both utilized the HVS two question screening tool. One study was

done over a two-month period and 15.4% of respondents reported FI (Robinson et

al, 2018). The other study was done over a one-month period and 17.5% of

parents reports FI (Gonzalez et al., 2021). Robinson et al. (2018) also surveyed

ED staff members and concluded staff believed screening was feasible and

allowed to provide the best quality of care. 77.6% of staff also believed FI

screening should be being completed in the pediatric ED (Robinson et al., 2018).

Common themes between these two studies included an association between

positive screens and a lack of primary care. It also showed those with public

insurance were more likely to screen positive for FI. Strengths of these studies include statistical significance of FI and the certain groups associated with FI and the fact the screening only took five minutes on average. Limitations to both studies would be small convenience samples; with the one-month study screening 214 children and the two-month study screening 439 children. Another similar limitation was the short time periods in which these studies were done.

The screening process is a critical part of assessing the prevalence of FI in the pediatric setting. Due to pediatrics being minors, parents and caregivers are the one's completing the screening and assuring the process is feasible from their perspective is essential. The 18 item Household Food Security Survey Module (HFSSM) can be used to screen for FI but can be a timely process due to the number of items. The HVS two-question screening tool is easier to administer and is effective in identifying children in food insecure households. Gattu et al. (2019) examined the specificity and sensitivity of the HVS versus the HFSSM in the emergency department and primary care settings. Specificity and sensitivity of the HVS against the HFSSM were 86.2% and 96.7%, indicating the HVS is valid in identifying children effected by FI (Gattu et al., 2019).

Health care providers should feel comfortable assessing for FI and having conversations related to FI. Barnidge et al. (2020) approached 201 caregivers to assess factors contributing to whether a caregiver would disclose FI concerns. They conducted interviews with parents The major factors influencing their

decision to disclose included: believing they could handle FI on their own, feeling

embarrassed, and not viewing FI as a serious problem and therefore not wanting

to disclose this information (Barnidge et al., 2020). These results highlight the

importance of the FI screening being done in the most comfortable way for

caregivers. Barnidge et al. (2020) found parents are more likely to disclose FI if

their child was not present and Gonzalez et al. (2021) found parents preferred to

be screened electronically or on a paper survey versus verbally being asked the

HVS screening. Themes included consistent preferences when it comes to the

format of the screening and increased responsiveness if the feel FI is a true

problem. Both studies had limitations due to small sample size, but both provided

great insight directly from caregivers. Gaining this knowledge greatly influences

the process of FI screening.

Once a family screens positive for FI, they should be receiving

information to help connect them to food. Different studies had different

approaches as to how they connected families to resources. Robinson et al. (2018)

and Barnidge et al. (2020) both expanded on the fact that ED's have social

workers present to help connect families to resources. They noted not all settings

will have social services and recommended families being connected with a

primary care provider to better address these needs. Cullen et al. (2020) revealed

caregivers who screen positive to FI want to be connected to resources via their

cell phones and to be connected to geographically close resources. When social

services are not readily available in settings like a pediatric urgent care, these other methods of connection must be taken into consideration. Another approach to providing resources was having one dedicated person responsible for this. During the study conducted by Gonzalez et al. (2021), there was a dedicated screener performing the HVS screening who would also provide resources to families screening positive. The screener would provide local resources such as food banks and instructed them on how they could apply for nutritional assistance programs. Having a screener allowed for each family's resource to be personalized but a weakness was the time spent per family needing this assistance.

Knowles et al. (2018) evaluated the referral process for when families screen positive to FI. It found many families were already enrolled in nutritional assistance programs such as Supplemental Nutritional Assistance Program (SNAP) and Women, Infant, Children (WIC) programs. These families preferred they be provided with local supplemental food programs such as local food pantries. One theme and strength between the studies examining the process of providing resources was taking the families preference into consideration when assisting them in getting food. The studies had similar limitations due to the limited generalizability with them all having localized implementation. Given the findings on the referral process, it would be feasible to implement an electronic HVS screening tool which then automatically populated local food resources for

families who do screen positive. This would allow for confidentiality and provide geographically appropriate resources.

The last common theme across the literature is the negative effects FI can have on pediatric health and developmental outcomes. Thomas et al. (2015) found in children aged 2-17 living in food insecure households are less likely to be in a state of good health and they are more likely to suffer from asthma and behavioral issues. Asthma diagnosis was 16.3% higher and depressive symptoms were 27.9% higher in food insecure children (Thomas et al., 2015). This study also suggested parental stress due to FI could be the cause of the negative effect on the child's mental and physical health. There was another study conducted by Hatem et al. (2020) examining how FI during early childhood can be a predictor of adolescent mental health. FI was assessed when children were five years old and their mental health was assessed at the age of 15. If the child screened positive for FI at the age of five, they were more likely to suffer from depression and anxiety at the age of 15 (Hatem et al., 2020). A common theme among these two studies is the fact of FI affecting a child's long- term and short-term health.

Two studies selected for this literature review examined the effects and stress FI has on a child's developmental outcomes. A qualitative study conducted by Leung et al. (2020) discussed how children coped with living in food insecure homes and how it caused psychological distress. It demonstrated children suffer from similar experiences including anxiety over not having food as a common

theme, sadness because they are aware they do not have enough food, feeling

embarrassed, being worried about their parents' health, and feeling anger (Leung

et al., 2020). Having these constant worries and concerns has been shown to effect

their developmental outcomes. Grineski et al. (2019) studied how this

psychological distress effected a child's academic performance, executive

functioning, and their socialization. This study took place over two years and

found children living with FI are more likely to have lower math scores, had

worse self-control, and have a decreased working memory (Grineksi et al., 2019).

Recommendations to further assess the negative long tern developmental

outcomes include following children over a longer period. Although this may

have been a limitation, the literature still shows the significant effects FI has on

psychological, developmental, and physical health outcomes.

One last study included in the literature review was one looking at FI since

the COVID-19 pandemic. This study was limited in that it was only conducted

over a week via cross-sectional survey, but it overall had a large sample size

225,000 respondents. 41% of previously food secure households screened positive

for FI months after then pandemic began (Lauren et al., 2021). Households with

incomes $50,000-$100,000; 43% were at risk for being FI (Lauren et al., 2021).

These numbers suggest the COVID-19 pandemic has correlated with an increase

in FI households. This further reiterates the need for children to be screened for

FI.

The Institute for Healthcare Improvement's (IHI) model of change is a simplistic but powerful tool to test change and will be the framework guiding this project. The PDSA cycle is used to test small changes and decide if the implementation caused improvement (Institute for Healthcare Improvement [IHI], 2022). It allows for implementing a change, observing outcomes, and then making changes for the next cycle as necessary (IHI, 2022). This will allow for multiple cycles to help children be screened adequately for FI and assist in finding their families resources.

In summary, FI is a serious problem with detrimental effects on children's mental and physical health, but there is room to improve recognition of FI. Literature suggests it should be screened for outside of the primary care setting due to many children not regularly being followed by PCPs and therefore not being screened for FI per the AAP recommendations. There are gaps in the literature as far as how FI effects health as adolescents enter adulthood. However, there is strong evidence showing the poor outcomes it has during childhood. The PDSA cycle will help evaluate the need for FI screening in a pediatric urgent care and will influence the future cycles related to pediatric FI. It will aid in identifying children who need assistance and will benefit their future health outcomes.

<div align="center">**Methods**</div>

Design

This quality improvement (QI) project will be utilizing an observational descriptive design to assess for FI in a pediatric only urgent care. The implementation period will take place February 1, 2023 to March 1, 2023.

Setting

This QI project will be conducted in a 23 room, pediatric only urgent care located in a large Midwest suburban city. The urgent care is staffed with 25 nurses, 21 care assistants, and more than 20 doctors and nurse practitioners.

Sample

A voluntary response sample will be used for this project. Inclusion criteria will be pediatric patients aged 2 days of life to 21 years of age. Exclusion criteria include pediatric patients one day of age and patients greater than 21 years of age. Exclusion criteria will also include emergent patients.

Data Collection/Analysis

Data collected will be de-identified. The information being requested will be gathered by a QR code and the data will be analyzed using Research Electronic Data Capture (REDCap). The total number of screenings will tracked and the outcomes will be analyzed using an independent t-test.

Approval Processes

Approval for this clinical scholarship project was obtained first by the management team at the urgent care where it is taking place. Next, a meeting with a physician in the urgent care was completed and approval from her was

completed. After three meetings, the final data collection method was decided upon. Approval from the clinical agency will be obtained and the project will be deemed a QI project. International Review Board (IRB) approval will be obtained through University of Missouri-St. Louis (UMSL) IRB before the clinical project begins.

Procedures

Before this QI project is implemented, education will be done for the entire multidisciplinary team working in urgent care. This will include the access representatives, care assistants, nurses, and providers. Education will be done by PowerPoint presentation. Concerns will be addressed before implementation. At the time of implementation, QR codes will be placed in each patient room. The families will be asked by the care assistant or the nurse to fill out the questions. When scanned, the QR code will take families to the two question HVS screening. It will have a third question asking the patient's demographics and a fourth question asking if the child has seen a PCP in the last 12 months. Once the screening is submitted, whether the screen is positive or negative; each family will be a given a list of local resources to assist if they are food insecure.

Results

The primary outcome measure of this project was the completion of the screening tool. A total of 261 families completed the screening over a four-week period. This was 8% of the families seen in urgent care in the four-week period.

Of the 261 families who completed the survey 68.8% were White, 10.4% were

Black or African American, 10.4% were Hispanic or Latino or Spanish Origin of

any race, 8.1% were two or more races, and 0.8% were Native Hawaiian or other

Pacific Islander, American Indian or Alaskan Native, and Asian. Demographics

are shown in Figure 3. Two secondary outcome measures included the prevalence

of FI and the demographics associated with FI. Of the 261 families who

completed the HVS screening, 33% screened positive for FI. The demographics

of the positive screenings consisted of 66% White, 12% Hispanic or Latino or

Spanish Origin of any race, 11% Black or African American, 7% two or more

races, 2% American Indian or Alaskan Native, and 1% were Asian or Native

Hawaiian or other Pacific Islander.

      The last secondary outcome measure was the correlation between the

child seeing their PCP in the last 12 months and being FI. To assess this, two, two

tailed independent t-tests were run. One assessed the association between a

positive HVS question 1 and a child seeing their PCP in the last year and the

second assessed the associated between a positive HVS question 2 and a child

seeing their PCP in the last year. The results of the t-test for HVS question 1 and a

child having a PCP showed a p value of 0.982 and the results of the t-test for HVS

question 2 and a child having a PCP showed a p value of 0.523. These two p

values show there was not a statistical significance between a positive screen and

a child having a PCP. The results are shown in Table's 1 and Table 2. The error

bars display 95% of the confidence interval for normal distribution and represent how much error there was in the measurements. These are displayed in Figure 1 and Figure 2.

Discussion

The prevalence of FI in this sampling 33%, which exceeds the prevalence recorded in many of the studies examined for the literature review. In children aged two days to 21 years of age, the results of implementing the HVS screening tool in a pediatric urgent care did identify that there are children being seen who are living with food insecurity. There was not a significant correlation between a child being food insecure and them seeing their PCP within the last 12 months. This concludes that pediatric FI is not necessarily associated with a child not having a PCP. The results could mean a child has a PCP but they are not being screened for FI while they are there or it could mean they are being screened but not being given appropriate resources. In this study, a majority of the positive screenings occurred in those who identified as White which is not what was found in many previously conducted studies. This result likely occurred given a large percentage of those who completed the screening tool also identified with being White.

The results of this study identify many implications for practice. One implication would be children should be screened for FI outside of their primary care office. Urgent care seems to be a feasible place for screening to be completed

given the results. For this study, families were given local resources. Another

future implication could include the screening being part of the patient's medical

record. By it being part of the medical record, this specific health care system's

center for family resources could be notified when a family screens positive and

would be able to reach out to families to further assist them.

There were limitations to this study. One limitation was there could have

been selection bias of the sampling since the screening tool was voluntary for

families to complete. Another limitation was relying on staff members to ask

families to fill out the screening tool. There were a large number of families who

did not complete the screening tool and therefore were not included in the sample.

This could have been due to them choosing not to fill it out or due to staff

members not asking them to fill it out. Lastly, the screening tool was only

available in English and Spanish. Families who speak other languages could have

been missed given the language barrier.

Future recommendations for research include assessing age and certain

health conditions and how they are associated with FI. Another future

recommendation would be linking their screening to their health record. By doing

this, it would be easier to assess age, demographics, and chronic health conditions

associated with FI. Lastly, screening for other social determinants of health

(SDOH) such as: stable housing, transportation, and ability to pay utilities in the

home. If children are not being screened for FI on a regular basis, it is conceivable

to assume they are not being screened for other SDOH.

Conclusion

FI was fairly common in this suburban pediatric urgent care, contributing

to already formed evidence of FI being an issue within the pediatric population.

Although there was no clear association between a child seeing their PCP in the

last 12 months and being food insecure, this QI project still demonstrated the need

for FI screening outside of a child's PCP office. It is evident that children are

either not being seen by their PCP, they are not being screened by their PCP or,

they are being screened but not being connected with adequate resources. Using

the HVS screening tool is a time-conscious way to screen for FI and screening for

FI outside of primary care is imperative to assure best health outcomes for

children.

References

American Academy of Pediatrics (AAP). (2022). *Food insecurity.*

> https:www.aap.org

Barnidge, E., Krupsky, K., LaBarge, G., & Arthur, J. (2020). Food insecurity

> screening in pediatric clinical settings: A caregivers 'perspective.
>
> *Maternal & Child Health Journal, 24*(1), 101–109. doi:10.10007/s10995-
>
> 019-02785-6

Children's Health Report Card (CHCRC). (2022). *Children's health coverage in*

> *Missouri.* https://www.kidshealthcarereport.ccf.georgetown.edu

Children's Health Watch. (2022). *Hunger vital sign.*

> https://childrenshealthwatch.org

Gattu, R.K., Paik, G., Wang, Y., Ray, P., Lichenstein, R., & Black, M.M. (2019).

> The hunger vital sign identifies household food insecurity among children
>
> in emergency departments and primary care. *Children, 6*(10), 1-12. doi:
>
> 10.3390/children6100107

Gonzalez, J.V., Hartford, E.A., Moore J., & Brown, J.C. (2021). Food insecurity

> in a pediatric emergency department and the feasibility of universal
>
> screening. *Western Journal of Emergency Medicine, 22*(6), 1295-1300.
>
> doi: 10.5811/westjem.2021.7.52519

Grineski, S.E., Morales, D.X., Collins, T.W., & Rubio, R. (2018). Transitional

> dynamics of household food insecurity impact children's developmental

outcomes. *Journal of Developmental and Behavioral Pediatrics, 39*(9), 1-

10. doi: 10.1097/DBP.0000000000000598

Hatem, C., Young Lee, C., Zhao, X., Reesor-Oyer, L., Lopez, T., & Hernandez,

D.C. (2020). Food insecurity and housing instability during early

childhood as predictors of adolescent mental health. *Journal of Family*

Psychology, 34(6), 721-730. doi: 10.1037/fam0000651

Institute for Healthcare Improvement (IHI). (2022). *Science of improvement: How*

to improve. https://ihi.org

Knowles, M., Khan, S., Palakshappa, D., Cahill, R., Kruger, E., Poserina, B.G., &

Chilton, M. (2018). Successes, challenges, and considerations for

integrating referral into food insecurity screening in pediatric settings.

Journal of Health Care for the Poor and Underserved, 29(1), 181-191.

doi:10.1353/hpu.2018.001

Lauren, B.N., Silver, E.R., Faye, A.S., Rogers, A.M., Woo-Baidal, J.A., Ozanne,

E.M., & Hur, C. (2021). Predictors of households at risk for food

insecurity in the United States during the COVID-19 pandemic. *Public*

Health Nutrition, 24(12), 1-8. doi: 10.1017/S1368980021000355

Leung, C.W., Stewart, A.L., Portela-Parra, E.T., Adler, N.E., Laraia, B.A., &

Epel, E.S.(2021). Understanding the psychological distress of food

insecurity: A qualitative study of children's experience and related coping

strategies. *Journal of the Academy of Nutrition and Dietetics, 120*(3), 395-

403. doi: 10.1016/j.jand2019.10.012

Robinson, T., Bryan, L., Johnson, V., McFadden, T., Lazarus, S., & Simon, H. K.

(2018). Hunger: A missed opportunity for screening in the pediatric

emergency department. *Clinical Pediatrics, 57*(11), 1318–1325. doi:

10.1177/0009922818778044

Thomas, M.C., Miller, D.P., Morrissey, T.W. (2019). Food insecurity and child

health. *Pediatrics, 144*(4), 1-9. doi: 10.1542/peds.2019-0397

Appendix A

Table 1

Two-Tailed Independent Samples t-Test for hvsquestion1 by pcp

	1			2					
Variable	*M*	*SD*	*n*	*M*	*SD*	*n*	*t*	*p*	*d*
hvsquestion1	2.63	0.61	205	2.64	0.53	44	-0.02	.982	0.00

Note. N = 249. Degrees of Freedom for the *t*-statistic = 247. *d* represents Cohen's *d.*

Figure 2

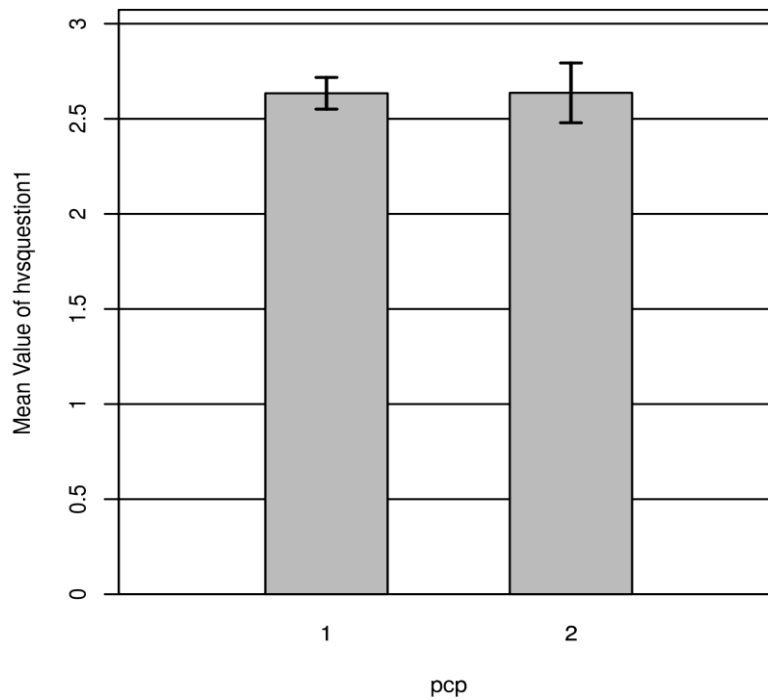*The mean of hvsquestion1 by levels of pcp with 95.00% CI Error Bars*

Table 2

Two-Tailed Independent Samples t-Test for hvsquestion2 by pcp

Variable	1			2					
	M	*SD*	*n*	*M*	*SD*	*n*	*t*	*p*	*d*
hvsquestion2	2.72	0.54	205	2.66	0.57	44	0.64	.523	0.10

Note. N = 249. Degrees of Freedom for the *t*-statistic = 247. *d* represents Cohen's *d.*

Figure 2
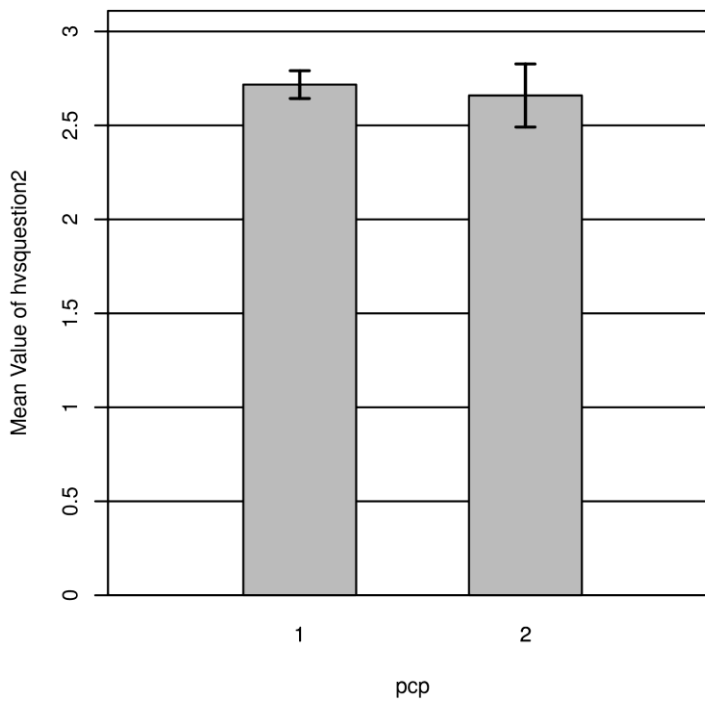*The mean of hvsquestion2 by levels of pcp with 95.00% CI Error Bars*

Figure 3
Patient and Family Demographics