ORIGINAL RESEARCH

Evaluating Perception of Child Health and Safety Needs in a Community Through the Perspective of Caregivers and Physicians

Zheyi Teoh; Ashley Zerr; Allison Black; Kerry Caperell; Wayne Rice; Brit Anderson

Abstract

Objective: To identify and compare child health and safety concerns in the community from the perspective of physicians and caregivers in Louisville. **Design:** We administered surveys to physicians and caregivers who were asked to list, via open-ended questions, the top three health or safety concerns they had for children in three separate age groups (≤ 3, 4-11, and ≥12 years old). Four reviewers assigned responses to a pre-specified category/subcategory through a schematic designed by the study team and a fifth reviewer addressed any discrepancies and assigned final categories. Agreement in assigning overall categories was measured using Fleiss Kappa and descriptive statistics were used to characterize the responses. **Setting:** Surveys were administered to caregivers who attended community events in Park Duvalle, a lower socioeconomic neighborhood in Louisville whose residents are predominantly black. Surveys were simultaneously administered to physicians throughout the University of Louisville/Norton Healthcare system. **Participants:** A total of 41 caregivers with at least one child and 43 physicians were surveyed in this study. **Results**: Overall categorical agreement between reviewers was k = 0.839, indicating good agreement on assignment. Injury/violence was identified by both caregivers and physicians as the top concern for children across all age groups. Wide variation was found when analyzing specific injury/violence subcategories, with caregivers more worried about household safety (17-40%) and gangs/unsafe neighborhoods (10-50%) while physicians were more concerned about sleep safety (36%), domestic violence (8-27%), and unintentional injury (10-20%). **Conclusions:** Survey administration was a feasible method of comparing health and safety concerns among caregivers and physicians. We identified injury/violence as the top health and safety concern across all age groups in our community

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but noted variation on the specific type of injury/violence. Replication of our study methodology in other neighborhoods may allow for improved comparison of caregiver and physician concerns. Keywords: Community Health, Injury and Violence

Introduction

The evaluation of a community's health needs and concerns can be performed in a multitude of manners but is traditionally done by a community health assessment. A community health assessment is the process of systematically identifying a neighborhood's needs and is accomplished through the collection and analysis of quantitative and qualitative data using various research methods including focus groups, surveys, and community maps.[1] A community health assessment can answer different questions such as what health issues exist, what factors exacerbate these health issues, and how these health issues affect the community as a whole.[2] In turn, these studies are useful for directing healthcare resources, policy development, and helping to design interventions to target evolving or pressing needs within the community. Although several community assessment studies have been published for the city of Louisville, KY,[3-5] none of these studies have specifically focused on children or neighborhoods with high levels of health inequity.

Since traditional assessments focus on responses from community members, little is known about the perspective of healthcare providers within a community. There is currently a paucity of research that compares the alignment of health concerns from a physician's perspective to a community's or caregivers' perspective. Existing studies have demonstrated that providers and caregivers can have differing perspectives on various topics, such as the quality of care delivered in a medical setting.[6] Little is known about how this varies among neighborhoods with greater health disparities including those belonging to racial minorities. It would be useful to gauge whether physicians in Louisville have a good understanding of the concerns of their community and a noticeable difference can suggest there are external factors acting on a community which may not be easily visible to healthcare providers. These disparities could then be addressed by educating physicians on these external factors that influence health needs and providing physicians with resources to address these concerns.

The objectives of this study were to obtain and compare data regarding child health and safety concerns in the community from the perspective of both caregivers, predominantly from lower socioeconomic neighborhoods, and physicians in Louisville.

Methods

Participants and procedures

A voluntary survey was administered between 2017 to 2018 to caregivers with children who attended community events in the Park Duvalle neighborhood in Louisville's western suburbs. Park Duvalle was chosen as it represents a lower socioeconomic neighborhood whose residents are predominantly black (estimated 59.7-92.4% of population).[7] These residents experience higher degrees of health inequity including a lower life expectancy (69.64-71.79 compared with a citywide average of 76.8) as well as higher rates of infant mortality, lead poisoning, sexually transmitted infections, and inpatient admissions for asthma when compared to other suburbs of Louisville.[8]

A similar voluntary survey was also distributed to residents and attending physicians from the University of Louisville Pediatrics program/Norton Healthcare system across various departments including inpatient pediatrics, outpatient/general pediatrics, emergency medicine, and sub-specialty services. This health system serves as Louisville's only tertiary pediatric center, pediatric emergency department, and level I pediatric trauma center. The community served by this health system has an average household income of $53,668 and a 8.69% uninsured rate (with 18.49% of those insured receiving Medicaid)[9].

Caregiver surveys included demographic information: age and gender of caregiver, relationship of caregiver to child, number of children in the home, and age of each child. Children were divided into 3 separate age groups

(≤ 3 years old, 4-11 years old, and ≥12 years old), and caregivers were asked to list, via open-ended questions, the top three health and safety concerns they had for their children.

Physician surveys also started with demographic information and asked physicians to identify the top three health and safety concerns they have for children they care for within each of the three age groups via open ended questions.

Both surveys were designed by members of this study team and were written at a 4th grade level by the Flesch-Kincaid scale. The University of Louisville's Institutional Review Board reviewed and approved the study's protocol and survey tools. Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

Statistical Analysis and Outcomes

After compilation of survey data, four reviewers from the study team assigned each open-ended answer to pre-specified categories and subcategories (Appendix 1). This schematic was designed by the study team based on categorization used by Healthy People 2020 and the American Academy of Pediatrics Blueprint for Kids and adapted to be pediatric and community focused. A fifth reviewer from the study team was responsible for addressing any discrepancies between the four reviewers and assigning a final category and subcategory if discrepancies existed. Agreement of overall categories among the reviewers was calculated using Fleiss Kappa (k).

Results

A total of 41 caregivers and 43 physicians were surveyed in this study. Baseline demographics were obtained from both caregivers and physicians as shown in Table 1 and Table 2 respectively. Figure 1 illustrates the Louisville neighborhoods our caregivers lived in and their geographic distribution. The majority of caregivers were mothers (74%) under 40 years-old (66%) with an average of 2 children per household. The majority of surveyed caregivers lived in the western suburbs of Louisville (Figure 1). The majority of physicians were residents (70%) with 0-3 years of clinical experience (67%).

Table 1. Demographics of Caregivers **(n=41)**

	n	%
Relationship to children		
Mother	30	74%
Father	4	10%
Grandparent	5	12%
Great Grandparent	1	2.5%
No Response	1	2.5%
Caregiver Age		
≤30	12	29%
31-40	15	37%
41-50	8	20%
≥51	5	12%
No response	1	2%
Caregiver Gender		
Female	36	88%
Male	5	12%
Age of Children		
≤3 years	19	22%
4-11 years	45	53%
≥12 years	21	25%
Household Insurance Status		
Insured	40	98%
Uninsured	0	0%
No response	1	2%

Figure 1. Geographic distribution of caregivers surveyed.

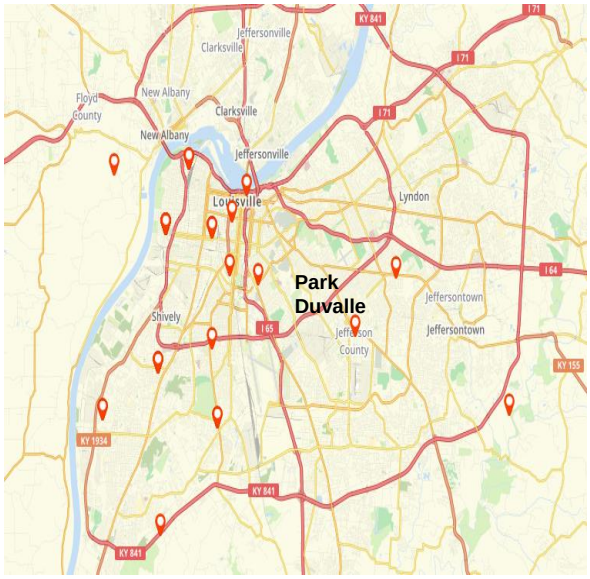

Table 2. Demographics of Physicians **(n=43)**

	n	%
Physician Age		
<30	29	67%
31-40	11	26%
>40	3	7%
Physician Role		
Resident	30	70%
Attending	13	30%
Years at Hospital		
0-2	27	63%
3-5	7	16%
6-8	2	5%
>8	7	16%
Years in Practice		
0-3	29	67%
4-6	3	7%
7-10	3	7%
11-20	6	14%
>20	2	5%

The top three safety concerns identified by caregivers and physicians is illustrated in figure 2 and 3. Injury/Violence was consistently identified by both community caregivers and physicians as the number #1 health and safety concern for children across all age groups. This was especially true for children ≤3 years old, with Injury/Violence accounting for 61% and 49% of all responses for caregivers and physicians respectively. Nutrition/Physical activity was also identified as a top concern for every age group amongst community caregivers and 2 of 3 age groups for physicians.

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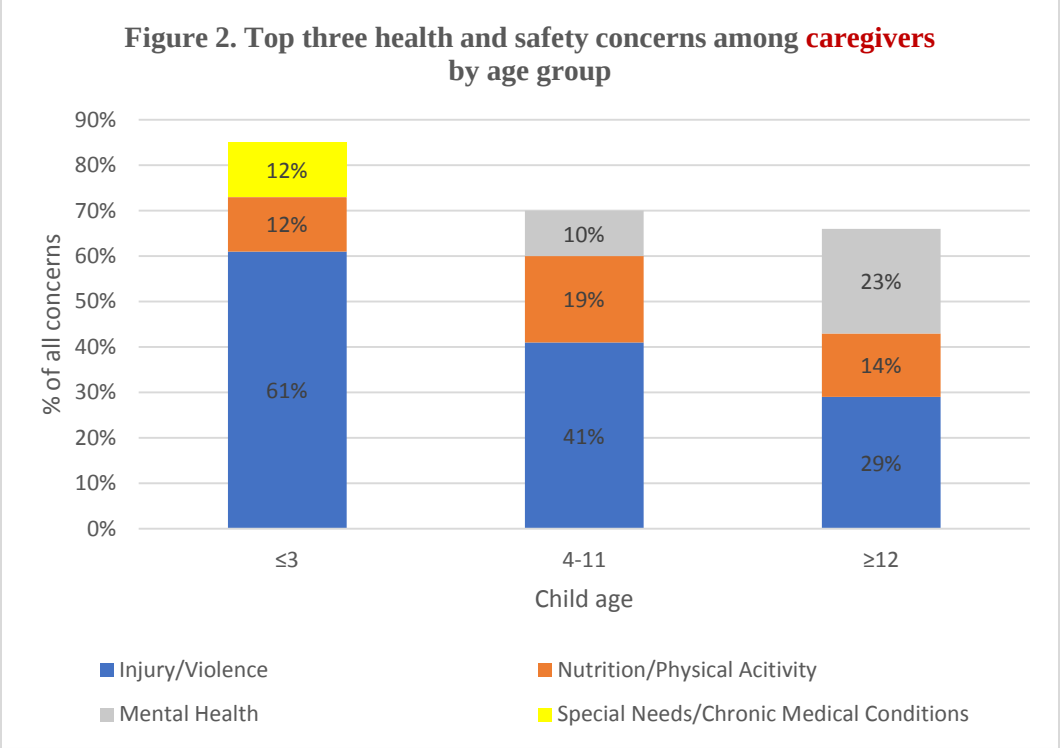
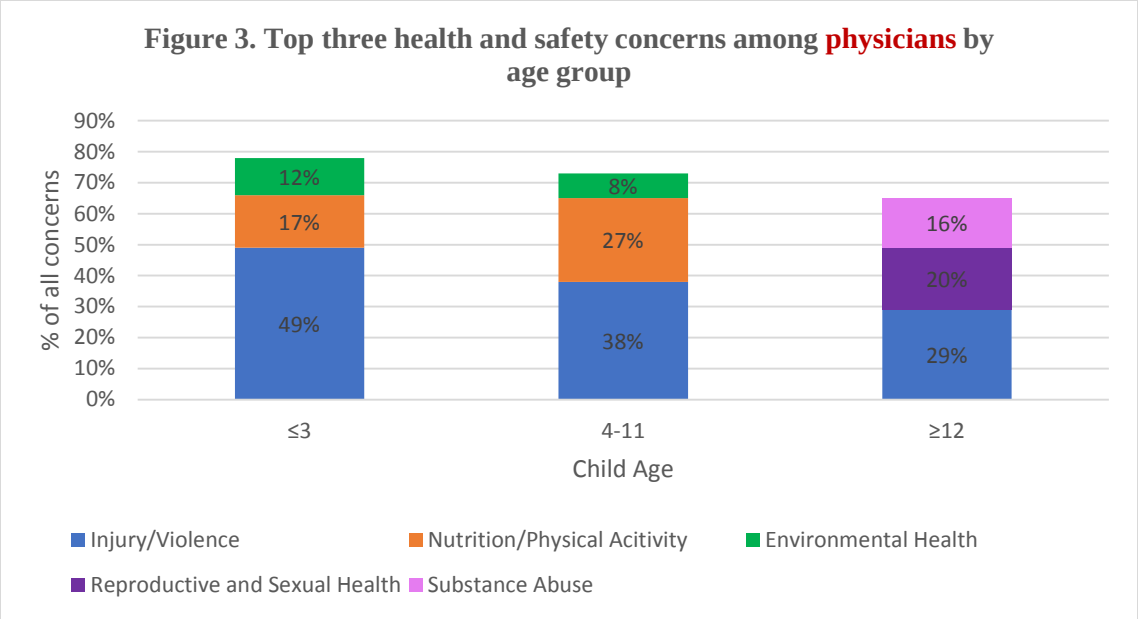


* Only the top three concerns are listed for each age group and are shown as a percentage of all categories



* Only the top three concerns are listed for each age group and are shown as a percentage of all categories

When examining the specific breakdown of injury/violence concerns (table 3), the subcategories had wide variation between caregivers and physicians. Caregivers were more worried about household safety, gangs, and unsafe neighborhoods while physicians identified sleep safety, domestic violence, unintentional injury, and firearms as their top concerns.

Table 3. Breakdown for Injury/Violence concerns

Injury/Violence Categories	Caregiver		Physician	
Child passenger safety				
≤3 years old	10%	n=2	16%	n=7
4-11 years old	4%	n=1	8%	n=3
≥12 years old	-	-	-	-
Bike/pedestrian safety				
≤3 years old	-	-	-	-
4-11 years old	4%	n=1	7%	n=3
≥12 years old	-	-	3%	n=1
Sleep safety/Sudden Infant Death Syndrome				
≤3 years old	10%	n=2	36%	n=21
4-11 years old	-	-	-	-
≥12 years old	-	-	-	-
Firearms				
≤3 years old	-	-	5%	n=3
4-11 years old	-	-	16%	n=7
≥12 years old	-	-	22%	n=8
Household safety (including burn, falls at home)				
≤3 years old	40%	n=8	8%	n=5
4-11 years old	17%	n=4	-	-
≥12 years old	-	-	-	-
Sport/recreation safety				
≤3 years old	-	-	2%	n=1
4-11 years old	-	-	4%	n=2
≥12 years old	-	-	3%	n=1
Bullying				
≤3 years old	-	-	-	-
4-11 years old	8%	n=2	7%	n=3
≥12 years old	40%	n=4	14%	n=5

Domestic Violence				
≤3 years old	-	-	27%	n=16
4-11 years old	-	-	20%	n=9
≥12 years old	-	-	8%	n=3
Child sexual abuse (including trafficking)				
≤3 years old	5%	n=1	-	-
4-11 years old	-	-	2%	n=1
≥12 years old	10%	n=1	-	-
Gangs/unsafe neighborhood				
≤3 years old	10%	n=2	-	-
4-11 years old	43%	n=10	2%	n=1
≥12 years old	50%	n=5	6%	n=2
Assault (other than bullying/gangs/DV)				
≤3 years old	-	-	-	-
4-11 years old	4%	n=1	-	-
≥12 years old	-	-	3%	n=1
Other intentional injury (not suicide)				
≤3 years old	-	-	2%	n=1
4-11 years old	4%	n=1	7%	n=3
≥12 years old	-	-	17%	n=6
Unintentional injury				
≤3 years old	25%	n=5	10%	n=6
4-11 years old	13%	n=3	20%	n=9
≥12 years old	-	-	17%	n=6

SIDS: Sudden Infant Death Syndrome. DV: Domestic violence
* Percentages shown represent response for each category as a percentage of all responses for that age group

Overall categorical agreement between reviewers was k = 0.839 (Fleiss Kappa), indicating good agreement on assignment of open-ended answers to our overall categories.

Discussion

Caregivers and physicians had a diverse array of health and safety concerns that varied across age groups. Noticeably, injury and violence dominated both caregivers' and physicians' concern across all age groups, especially in younger children. This reflects the overall prevalence and epidemiology of injury and violence in the United States. Unintentional injury is currently the leading cause of childhood mortality in children older than one year of age and fifth leading cause of death in children less than one year of age.[9] Repeated community exposure to violence could heighten a caregiver's awareness of violence and its detrimental impacts. Similarly, physicians seeing patients in high-violence communities may be more likely to choose this category given the significant mortality and morbidity involved in these events. The overall prevalence of injury and violence could explain why this category was chosen as a top concern and why overall agreement between caregivers and physicians was high.

When examining sub-categories of injury and violence, there are noticeable variations between both caregivers and physicians. The differences in exposures could explain this distinction, with community members more likely to witness violence in their own neighborhoods or homes (thus listing household safety and gangs/unsafe neighborhoods more frequently) and physicians (especially residents who primarily practice in an inpatient setting) more likely to see children present with sudden infant death syndrome (SIDS), injuries from child abuse, and firearm injuries.

This difference could impact the quality of anticipatory guidance provided during a healthcare visit. Parents may expect information on certain health topics that are important to them but are instead, provided with information that only physicians prioritize as necessary. Indeed, a review of safety and injury prevention topics suggested by the American Academy of Pediatrics/Bright Futures guidelines includes car safety, safe sleep, firearm safety, safe home environment, drowning, sun protection, and helmet safety topics which better align with health concerns of physicians.[10] One study demonstrated that physicians and caregivers already disagreed on the estimation of how often safety issues were addressed by doctors, even though the majority of both groups viewed these discussions as 'extremely' or 'very' important.[11] These factors illustrate that significant improvements are needed in the anticipatory guidance provided during preventative visits to better align the expectations of doctors and caregivers.

There are several limitations to this study. Physician respondents were predominantly residents with less clinical experience in these neighborhoods, which could have led to the decreased agreement between physician and caregiver when examining specific concerns. The low number of attending physicians surveyed limited the ability to perform a sub-analysis of agreement between attendings and community caregivers which may be better aligned when compared to residents. In addition, because parents provided answers in an open-ended form, there was occasionally difficulty in assigning categories that did not exist or difficulty assigning to a broader category based on our schematic (for example, technology/internet use and child abuse were not easily categorized). Nevertheless, the overall agreement between reviewers in assigning overall categories was good (k = 0.839, Fleiss Kappa) indicating that categories were appropriately assigned with limited instances of disagreement. Finally, the small sample size limits the strength and generalizability of these findings.

Overall, this study methodology could be replicated in different locations and with different types of providers including sub-specialists and adult providers. We view this as a hypothesis generating study, and further studies that utilize interviews or focus groups would help examine factors that contribute to these differences in perception. For example, are physicians inadequately aware of the neighborhoods and living conditions of their families, and why are parents not as concerned about safe sleeping, sudden infant death syndrome (SIDS), and firearms? Factors that lead to these differences could then be addressed to better harmonize physician and caregiver priorities during a well-child exam. In addition, although unintentional drowning, unintentional fire/burns, unintentional firearm injuries, and homicide by firearms were top ten causes of deaths across the pediatric age spectrum,[9] these were not commonly listed by caregivers and/or physicians as their top concerns and further studies to address this incongruence may be necessary.

Conclusion

Health and safety concerns among caregivers and physicians were varied, but both groups consistently identified injury and violence as the top concern across all age groups. Agreement on the type of concerns between caregivers and physicians was high when comparing broad categories as a whole, but agreement diminished when examining specific subcategories. Further studies to examine the factors contributing to this difference would be helpful to align priorities of physicians and parents during a child's healthcare visit.

Appendix 1- Categories for Grouping of Open Ended Responses

Healthcare
- Lack of, or unhappy with primary medical doctor
- Insurance Problem (including not having insurance)
- No transportation to appointments
- Immunization concern
- Other

Special Needs/chronic Medical Conditions (NOT obesity)
- Respiratory (include asthma)
- Diabetes
- Developmental delay (include mental retardation, autism, sensory disorder)
- Hematologic
- Premature infant
- Other

Recent Acute Illness/Injury
- Minor Injury
- Major Injury (hospitalized)
- Minor Illness
- Major Illness (hospitalized)
- Other

Substance Abuse
- Opioid/narcotic
- Marijuana/spice
- Stimulant
- Alcohol

Tobacco
Other family member with substance abuse (i.e. parent)
Other Mental Health (NOT substance abuse)
Suicide-completed
Suicide-attempted
Depression/anxiety
Bipolar/Schizophrenia
Behavior concerns
Family member with mental health issue
Other
Education
Quality of Schools
Concern about school transportation (e.g. busing)
Drop out/concern about completing school
Other
Environmental Health (NOT violence)
Air quality/pollution
Tobacco smoke exposure
Lead exposure
Other
Housing
Housing insecurity/homelessness
Poor housing condition
Other
Nutrition/Physical Activity
Food insecurity/hunger
Concern about available food quality
Lack of knowledge of healthy diet
Obesity
Malnutrition
Breastfeeding/infant nutrition concern
No safe place to exercise
Other
Injury/ Violence (NOT suicide)
Child Passenger Safety
Bike/ pedestrian Safety
Sleep Safety/ Sudden Infant Death Syndrome (SIDS)
Firearms
Household safety (burns, falls at home)
Sport/recreation Safety
Bullying
Domestic Violence
Child Sexual Abuse (include trafficking)
Gangs/ unsafe neighborhood
Homicide
Assault (other than bullying/gangs/domestic violence)
Other intentional injury (not suicide)
Other unintentional injury
Justice System
Juvenile Justice System Concern
Parent involved in Justice System
Other
Other Poverty (if not specifically related to housing, food, or other category above)
General transportation
Unemployment
Other
Reproductive and Sexual Health
Contraception
Sexually Transmitted Infections
Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ) issues
Other
Oral Health

Due to lack of specific categories for these broad answers, these conditions were classified in the following manner

- Non-accidental trauma/Child physical abuse was classified under Injury/Violence: Domestic Violence
- Parenting education/concerns was classified under Education: Other
- Technology/internet concerns was classified under Environmental: Other
- Sleep concerns not related to sudden infant death syndrome was classified under Nutrition/Physical activity: Other

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