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To cite this article: Frances Barry, LR Thompson, B Ravandi, TP Chang, JS Halterman, PG Szilagyi & SO Okelo (2020): Parental preferences for survey mode of administration, interview vs. self-administered, with an asthma management questionnaire, Journal of Asthma, DOI: [10.1080/02770903.2020.1728766](https://doi.org/10.1080/02770903.2020.1728766)

To link to this article: <https://doi.org/10.1080/02770903.2020.1728766>



Accepted author version posted online: 13 Feb 2020.



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Review

Parental preferences for survey mode of administration, interview vs. self-administered, with an asthma management questionnaire

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Background: National asthma guidelines encourage use of patient surveys to aid clinical assessment. Little is known about how these should be administered in acute care settings such as the emergency department (ED). **Objective:** Evaluate if parents have a preference for interview vs. self-administered surveys in an ED, understand the sociodemographic and clinical characteristics by choice of survey mode of administration, and assess if there is a difference by mode in the parent's perception of an asthma management tool. **Methods:** A research assistant (RA) surveyed parents of children 2-17 years of age seeking ED asthma care. Parents chose to either self-administer or have an RA-administered survey that included the Pediatric Asthma Control and Communication Instrument-ED version (PACCI-ED). We compared sociodemographic and clinical characteristics and perceptions about the PACCI-ED by mode of survey administration. **Results:** Of 174 parent participants, 60% chose interviewer-administered surveys. Parents who chose interviewer-administered versus self-administered surveys had lower income, lower educational attainment and children with uncontrolled asthma ($p < 0.05$). Bivariate and multivariate analyses showed that parents who chose interviewer-administered versus self-administered surveys tended to rate the PACCI-ED more favourably. **Conclusions:** EDs wishing to systematically use an asthma survey may need to plan appropriate resources for staff to administer them, particularly if they serve populations of lower socioeconomic status.

Keywords: asthma, survey mode of administration, emergency department, pediatrics, high risk families, pediatric asthma control and communication instrument (PACCI)

Introduction

Pediatric asthma researchers and clinicians are commonly encouraged to use validated surveys to collect data for evaluation of care quality and outcomes (1-4), and to document asthma symptoms or asthma control. The method of contacting survey recipients, the mode of administration (e.g. self-administered vs. interview), questions to include and the order of the questions can all influence the overall survey response rate, survey item response rates, and how questions are answered. In particular, the mode of administration may have substantial impact on survey responses (5).

Studies have shown that minority populations and those with a lower socioeconomic and education status are more likely to struggle with health literacy (6). Surveys, whether for research or clinical purposes, may be challenging for this population if the only options are written, self-completed materials (7). Face-to-face or telephone interviews can reduce the comprehension burden for study participants or patients (5).

The Pediatric Asthma Control and Communication Instrument-Emergency Department version (PACCI-ED) is a validated questionnaire to assess pediatric asthma morbidity in the Emergency Department (ED). The PACCI-ED consists of two domains. The first domain has seven questions that assess asthma morbidity during the previous year. The second domain has four assessment questions for the prior week and one question for the previous two weeks. In between these two domains, one question asks about daily medication adherence. The PACCI-ED was developed with input from patients and physicians (8-10,19-20), then validated among urban, African American and Latino populations (11-14). The 12 questions in the PACCI-ED are written at a fifth grade reading level. The tool was designed to be self-completed by a parent in 5 to 7 minutes. Prior work by our group has shown favorable parental responses to the PACCI-ED (15). However, it is not clear how parental responses were influenced by the method of survey administration. Understanding the feasibility and/or biases of self-completed versus interviewer-administered surveys have implications for the sustainability and/or usefulness of asthma surveys in the ED and other time-sensitive care settings.

The purpose of this study was to conduct a secondary data analysis to evaluate if parents seeking ED asthma care for their child, had a preference for an interviewer- versus self- administered asthma survey. In addition, we sought to assess the association between the mode of survey administration with sociodemographic characteristics, asthma severity, and parent-reported perceptions of the PACCI-ED.

Methods

Parent study, setting, eligible subjects

This is a secondary data analysis leveraging data obtained as part of a single-arm intervention study to improve prescribing of inhaled corticosteroids by pediatric emergency medicine physicians. The study was conducted at a large, urban, academic children's hospital ED with an annual census of 86,000 visits a year. Inclusion criteria for the sample were as follows: parents of children ages 2-17 years with a previous diagnosis of asthma or presenting with respiratory symptoms consistent with asthma. Exclusion criteria were as follows: caregivers who did not speak English or Spanish, children with underlying complex respiratory disease (e.g., bronchopulmonary dysplasia or requiring home mechanical ventilation), cardiac or neurological disorders or children assigned to urgent care within the ED (i.e. Emergency Severity Index Triage levels 4 or 5).

Data were collected on patient and/or parent sociodemographic characteristics (education, household income, race, ethnicity, health insurance status), health literacy (Short Assessment of Health Literacy (16)), clinical asthma-related characteristics (PACCI-ED, lifetime asthma morbidity), prior asthma care, and identification of a primary care provider. The study was conducted from September 2017 through January 2018. The UCLA institutional review board approved the study.

Participant Study Enrollment

Parents of patients with respiratory-related chief complaints were approached consecutively, as they appeared on the triage board. When a parent consented to participate in the study, the RA asked the parent if they would like to complete the survey together with the RA (interviewer-administered) or if the parent preferred to complete the survey by themselves (self-administered). For parents who were more comfortable reading and writing in Spanish and preferred to self-administer the survey, a translated version of the survey was available. Parents who chose to self-administer the survey were asked twenty minutes later if they had any questions. Parents were given another 20 to 30 minutes to complete the survey, when the RA returned to collect the materials and

conduct the Health Literacy assessment. There were 3 RAs involved in enrolling participants in the study, 1 who was bilingual (English and Spanish) and two who used a translator for Spanish speaking parents.

The focus of the current analysis was to understand; (i) if parents have a preference for survey mode of administration (interviewed vs. self-administer), (ii) the sociodemographic and clinical characteristics of parents and children by survey mode of administration and (iii) the participant's perception of the PACCI-ED by survey mode of administration.

Parent's perception of the PACCI-ED

We surveyed parents about the ease of completion of the PACCI-ED, the appropriateness of wording to describe their child's asthma symptoms, its potential usefulness in improving understanding of the child's asthma for other parents, the ED physician and the PCP, completeness of the PACCI-ED, and its potential to interfere with care in the ED. Parents rated their level of agreement with ten evaluative statements about the PACCI-ED on a 5-point Likert rating scale (strongly agree, agree, neither agree or disagree, disagree, strongly disagree). Two additional evaluative statements regarding ease of use and usefulness were rated with a similar Likert-type rating scale (not useful/easy, a little useful/easy, moderately useful/easy, very useful/easy, extremely useful/easy).

For parents who preferred to be interviewed, the RA first read an evaluative statement and then read the answer options. For the ease of use and usefulness evaluative statements, the answer options were read from least favorable to most favorable. For the remaining ten evaluative statements the answers were read in the same order, beginning with "strongly agree" and ending with "strongly disagree". Parents who self-administered the survey were presented with all of the evaluative statements on one page, beginning with the statements regarding ease of use and usefulness, where the answers were listed from least favorable to most favorable. This was followed by a table with one row for each the remaining ten evaluative statements and one column for each possible answer, starting with "strongly agree" and ending on "strongly disagree" (reading left to right).

Analysis

We used descriptive statistics, means, and proportions to understand the distribution of the sociodemographic (age, ethnicity, race, education, income, health literacy, survey language) and clinical (on controller medication, asthma exacerbations and asthma control) characteristics. In addition to a frequency distribution of the levels of agreement, each of the 12 evaluation statements were collapsed dichotomously into strongly agree/agree versus neither agree or disagree/disagree/strongly disagree. Responses to ease of use (not easy, a little easy, moderately easy, very easy, extremely easy) and level of usefulness (not useful, a little useful, moderately useful, very useful, extremely useful) were collapsed into: 'not easy' and 'a little easy' (or 'not useful' and 'a little useful') versus 'moderately easy', 'very easy' and 'extremely easy' (or 'moderately useful', 'very useful' and 'extremely useful'), respectively. Differences between self-administered and interviewed responses were assessed by chi-square or Fisher Exact tests for proportions and by analysis of variance or Student's t-test for means.

An overall composite score for the parent's perception of the PACCI-ED was created by assigning a score of 1 for positive responses and a score of 0 for negative or neutral responses and summing the score across all 12 evaluation statements. A linear regression model was run with the composite score as the dependent variable and the survey mode of administration and the

sociodemographic and clinical characteristics as independent variables in order to determine the association of mode of administration while controlling for parental and child characteristics.

The percent of parents who selected the neutral option (neither agree nor disagree) two or more times was compared between self-administered and interviewed surveys with a chi-square test. For each demographic variable, the percent of missing responses was compared using chi-square or Fisher Exact tests.

Analyses were performed with SAS 9.4 statistical software (SAS Institute Inc., Cary, NC).

Results

Sociodemographic and Clinical Characteristics and Mode of Survey Administration

Three hundred and fifty-eight parents were approached, of whom 275 were screened, 204 were deemed eligible and 174 consented (participation rate 85%). The survey was completed in Spanish by 32 (18%) parents, with a translator used for just over half of them. Two of the three RAs did 91% of the enrollment. The percentage of parents who chose to do an interview was similar for both RAs.

The children were on average 6.9 years old (SD=4.2), 66% were identified as Latino and 86% were on public health insurance. Overall, 18% of the parents had not completed high school and one-third had an annual household income less than \$20,000. The majority of children (93%) were categorized as having uncontrolled asthma as indicated by the PACCI-ED, yet only 45% were on controller medication. (Table 1)

More than half (60%) of parents chose to be interviewed by the RA rather than self-complete the survey. More parents who requested an interview, compared to those who requested a self-administered survey, had not completed high school (24% vs. 9%, p -value=0.02), had an income < \$20,000 (40% vs. 24%, p =0.04), and their child had public health insurance (90% vs. 78%, p =0.04). Parents who requested an interview were also more likely to have a child whose asthma was uncontrolled (96% vs. 87%, p =0.04). (Table 1).

Parental Feedback on PACCI-ED by Mode of Survey Administration

Parents who were interviewed had a more favorable response to the PACCI-ED tool compared to parents who self-completed the survey (Figure 1). Specifically, interviewed parents were significantly more likely to agree that the PACCI-ED: should be given to all parents who come to the ED for their child's asthma (98% vs. 84%, p =0.03), uses the right words to describe child's asthma problems (98% vs. 90%, p =0.01) and should be part of the regular asthma visit (91% vs. 78%, p <0.001). Parents who were interviewed were also significantly more likely to agree that the PACCI-ED would help their PCP better understand their child's asthma (95% vs. 79%, p <0.001). Only 2% of interviewed parents agreed that the PACCI-ED interfered with their child's care in the ED versus 26% of parents who self-administered the survey (p <0.001). (Table 2)

The composite satisfaction score ranged from 2 to 12 with a mean of 9.8 (95% CI [9.4, 10.1]). In the adjusted linear regression, parents who were interviewed, had on average, a higher mean composite satisfaction score of 0.85 (95% CI [0.22, 1.49], p =0.009).

Parents who self-administered the survey were more than twice as likely to select the neutral option (neither agree nor disagree) across all questions, than parents who were interviewed (34% vs.

16%; $p=0.01$). There was no difference in the percent of missing values for the demographic data ($p>0.05$ for all demographic variables).

Discussion

In this study of urban, children seeking ED asthma care, the majority of parents preferred to be surveyed by interview rather than self-administration. Families with lower income status and education level and children with poorer asthma control were more likely to request to be interviewed. Both interview- and self-administered survey respondents favourably viewed the PACCI-ED, but parents who were interviewed had higher satisfaction levels.

In order to increase participation in surveys, researchers tend to provide potential responders with preferred feasible survey mode (17). However, very often the preferred mode of potential responders is unknown. Even if a potential responder has provided a preference, the response may be influenced by how they were asked about their preference (24). This study allowed parents to choose the survey mode with which they were most comfortable. This choice is important since we found that the higher risk population of subjects opted for an interview administered survey, which may help ensure they have the opportunity to be appropriately represented in the analytical sample. In survey research that does not include such options, a sample may be biased by a lower response rate from traditionally underserved sub-populations. For example, Lee et al. demonstrated that Hispanic, non-privately insured caregivers were less likely than white, privately-insured caregivers to respond to a mailed survey aimed at assessing satisfaction with hospital care for their child (18).

Evidence suggests that some populations need additional support in order to better understand their health care needs and directions. The Commonwealth Fund 2001 Healthcare Quality Survey (7) found that only 57% of responders said that materials from the doctor's office were "very easy" to understand, with Hispanics and Asian Americans having the lowest percentages, 45% and 44%, respectively. Although face-to-face interviews may require more financial and human resources than surveys conducted by mail or over the internet, they may be important to ensure higher risk populations are fairly represented. If pediatric EDs wish to incorporate such surveys broadly, it may be necessary to train staff and allocate sufficient time to offer interview-based surveys, particularly for high-risk patients. Patients usually have the time in the ED for surveys, consistent with our finding that only 11% of parents said the survey interfered with their visit at the ED.

It is difficult to directly compare the satisfaction levels of the two survey methods, as the survey mode was based on parental preference and responses could also be influenced by the population who chose to be interviewed. Nevertheless, we found higher satisfaction levels for the surveys conducted by interview even when controlling for sociodemographic and clinical characteristics, assuming that each of the 12 evaluation statements have equal weight. In addition, we had hypothesized that interviewed respondents would have higher levels of endorsement for the PACCI-ED, as they had more interviewer interactions than respondents who self-administered the survey (20). Parents who were interviewed may have been more subject to social-desirability bias and thus provided responses they believed the RA wanted to hear.

There are several limitations to our study findings. First, our setting was one large, urban pediatric ED, so may not be generalizable to other populations seen in other settings. However, the participant population did include a range of sociodemographic and clinical groups, including minorities, Spanish speaking subjects, and less educated populations. Second, the study leveraged a sampling approach that depended on RA availability. However, we recruited during peak ED activity hours and our participants were similar to populations seen commonly in urban ED settings. Third, it was not possible to collect data from parents who refused to be screened. This may have resulted in a

sub-population that we cannot describe, being excluded from the analysis, although, participants were representative of the source population. Fourth, although the RAs had an enrollment script, it is unknown if different RA's implicitly biased the parent's mode of administration selection. However, the two RA's who completed the majority of enrollments had a similar distribution of the mode of administration. Fifth, the PACCI-ED was only one component of a longer survey. It is unknown if the choice of mode of administration would have been different with a shorter survey (e.g., just the PACCI-ED). Sixth, it may be difficult to replicate this study as some organizations may not have the necessary resources to conduct interviews of patients. Finally, parents who self-completed the survey filled in a paper survey. We did not have the option of a tablet, a format with which some participants may be more comfortable. It is possible more parents would have selected the self-administered option if they did not have to hand write their answers.

Conclusion

When given the option, many parents of children with asthma seen in a large urban ED chose to complete surveys via interview rather than self-administration. This was particularly true for high-risk families, who were also more positive about the survey. This is relevant for both research projects and clinical care, supporting the need for training and adequate resources for interview-based surveys (particularly for high-risk patients) and caution given current trends towards greater use of self-administered tools for assessments.

Funding

This work was supported by a grant from the American Thoracic Society

Disclosures

The authors report no conflicts of interest. The authors alone are responsible for the writing and content of this paper.

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Table 1. Association of sociodemographic and clinical characteristics with mode of survey administration (N=174)

Participant Sociodemographic and Clinical Characteristics, n (%)	Mode of Survey Administration	
	Interview (N=104)	Self (N=70)
Child		
Age (years), mean (std)	6.87 (4.32)	6.66 (3.87)
Ethnicity: Latino	67 (67%)	41 (64%)
Race: Black or African American	13 (13%)	7 (11%)
Insurance: Medi-Cal	92 (90%)*	51 (79%)*
On controller medication	44 (42%)	35 (50%)
Parent		
Education: Did not complete high school	23 (24%)*	6 (9%)*
Income: < \$20,000	34 (41%)*	15 (24%)*
Health Literacy: Low	11 (26%)	3 (10%)
Survey: Spanish	20 (19%)	12 (17%)
Parent reports child has regular doctor 46 (94%) 39 (91%)		
Parent can provide the name of doctor/practice 41 (89%) 36 (92%)		
PACCI-ED		
Over the past 12 months		
1+ visits to Urgent Care	30 (29%)*	37 (54%)*
1+ visits to ED	78 (75%)	58 (83%)
1+ hospitalizations	27 (26%)	19 (27%)
1+ oral steroid use	64 (62%)	51 (74%)
1+ asthma morbidities** over the past 12 months	84 (82%)	62 (89%)
2+ asthma morbidities** over the past 12 months	70 (69%)	52 (77%)
Asthma control		
Controlled	4 (4%)*	9 (13%)*
Uncontrolled	100 (96%)*	61 (87%)*
Asthma control score***, mean (95% CI)	7.7 (6.9,8.4)	7.2 (6.2,8.1)

* $p < 0.05$, t-test, chi-square, fisher as appropriate

** exacerbations include any urgent care visit, emergency department visit, hospitalization, or use of oral steroids

*** Score > 3 indicates uncontrolled asthma

Due to missing data, the denominator for “Interview” ranged from 84 to 104 and the denominator for “Self” ranged from 64 to 70. The Health Literacy questions were not asked of everyone, resulting in the denominators of 43 for “Interview” and 30 for “Self”.

Table 2. Association of Level of Parental Agreement for PACCI Asthma Survey Reported by Mode of Survey Administration

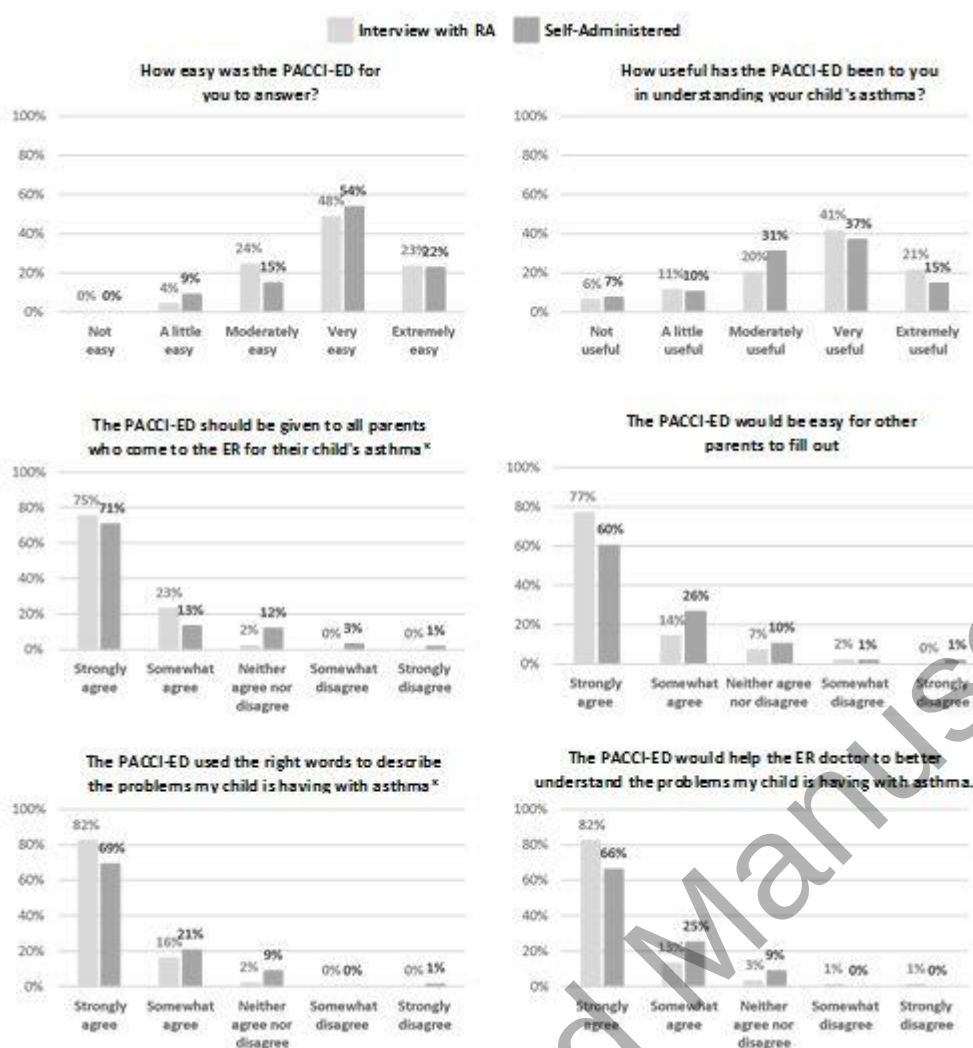
PACCI Questions Asked of Parents	Percentage of Parents Who Agree or Strongly Agree, by Mode of Survey Administration	
	Interview (N=104)	Self (N=70)
Easy to answer**	96%	91%
Useful in understanding child's asthma**	83%	82%
Give to all parents in ED for child's asthma	98%*	84%*
Easy for other parents to fill out	91%	87%
Uses the right words to describe child's asthma problems	98%*	90%*
Helps ED doctor to better understand child's current asthma problems	95%	91%
Share with child's PCP	96%*	80%*
Would help PCP to better understand child's asthma problems	95%*	79%*
Interfered with child's care in the emergency room	2%*	26%*
Asks more complete questions about child's asthma than ED doctor	45%	48%
Should be part of the regular ED asthma visit	91%*	78%*
Recommend to child's PCP	90%*	73%*

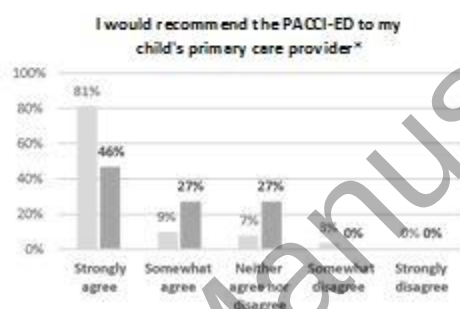
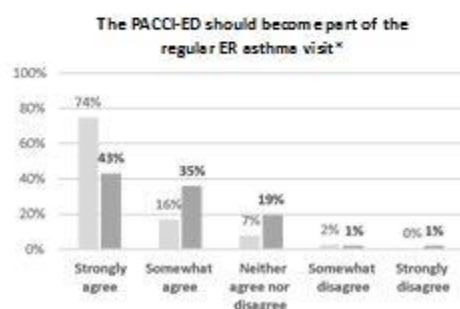
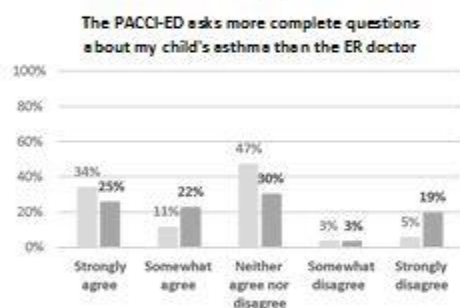
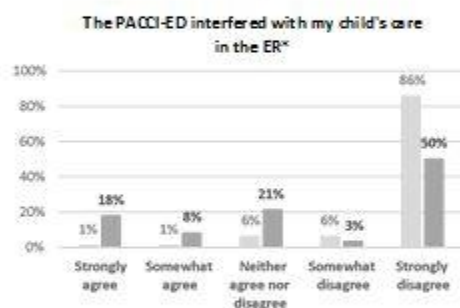
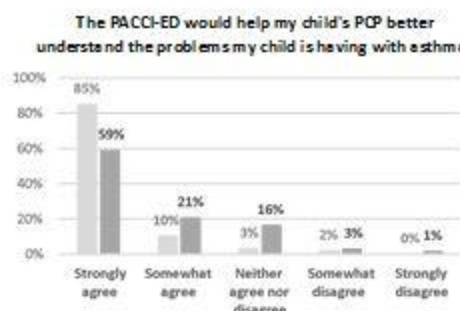
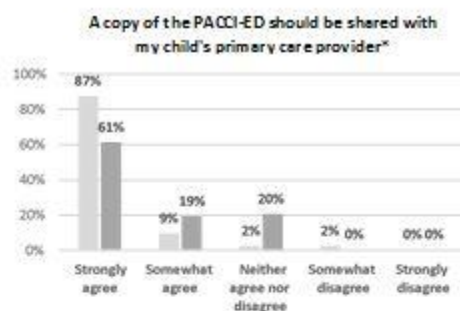
* p-value < 0.05, t-tests of Likert Scale (1 through 5)

** moderately, very or extremely easy/useful

Due to missing data, the denominator for "Interview" ranged from 97 to 100 and the denominator for "Self" ranged from 62 to 69.

Figure 1. Association of Level of Parental Agreement for PACCI-ED Reported by Mode of Survey Administration





*p < 0.05 for difference between Interview and self-Administered

Figure 2. Approach to Analysis

