

Background

Children with complex health problems, particularly **children with special health care needs (CSHCN)**, have **higher medical expenditures**¹ and experience **more barriers to care and gaps in quality**^{1,2} medical care than other children. Little is known about population-based associations between complementary and alternative medicine (CAM) use and conventional medical care (CMC) experiences for CSHCN and children with other complex health problems.

Objectives

1. Estimate the population-based prevalence of CAM use among CSHCN as well as among children included in children with chronic condition identification algorithms set forth for Primary Care Medical Home pay for performance demonstration projects (CMA ACA codes)³
2. Evaluate associations between CAM use and conventional medical care utilization, expenditures, access to care and quality of care

Methods

- Data from a linked file of the 2007 National Health Interview Survey (NHIS), including a Child CAM Supplement and the 2008 Medical Expenditure Panel Survey (MEPS) (Panel 13) and the 2012 NHIS was used

Primary outcome variables:

- **CAM use:** 39 types of CAM modalities including specific vitamins/minerals assessed (Table 1)
- **Identification of CSHCN:** Standardized and validated CSHCN Screener³ used to define CSHCN (included in MEPS since 1999)
- Children with Primary Care Medical Home Demonstration Projects ACA-qualifying conditions (PCMH/ACA)⁴
- **Chronic conditions:** 39 conditions (NHIS Sample Child)

Statistical analysis:

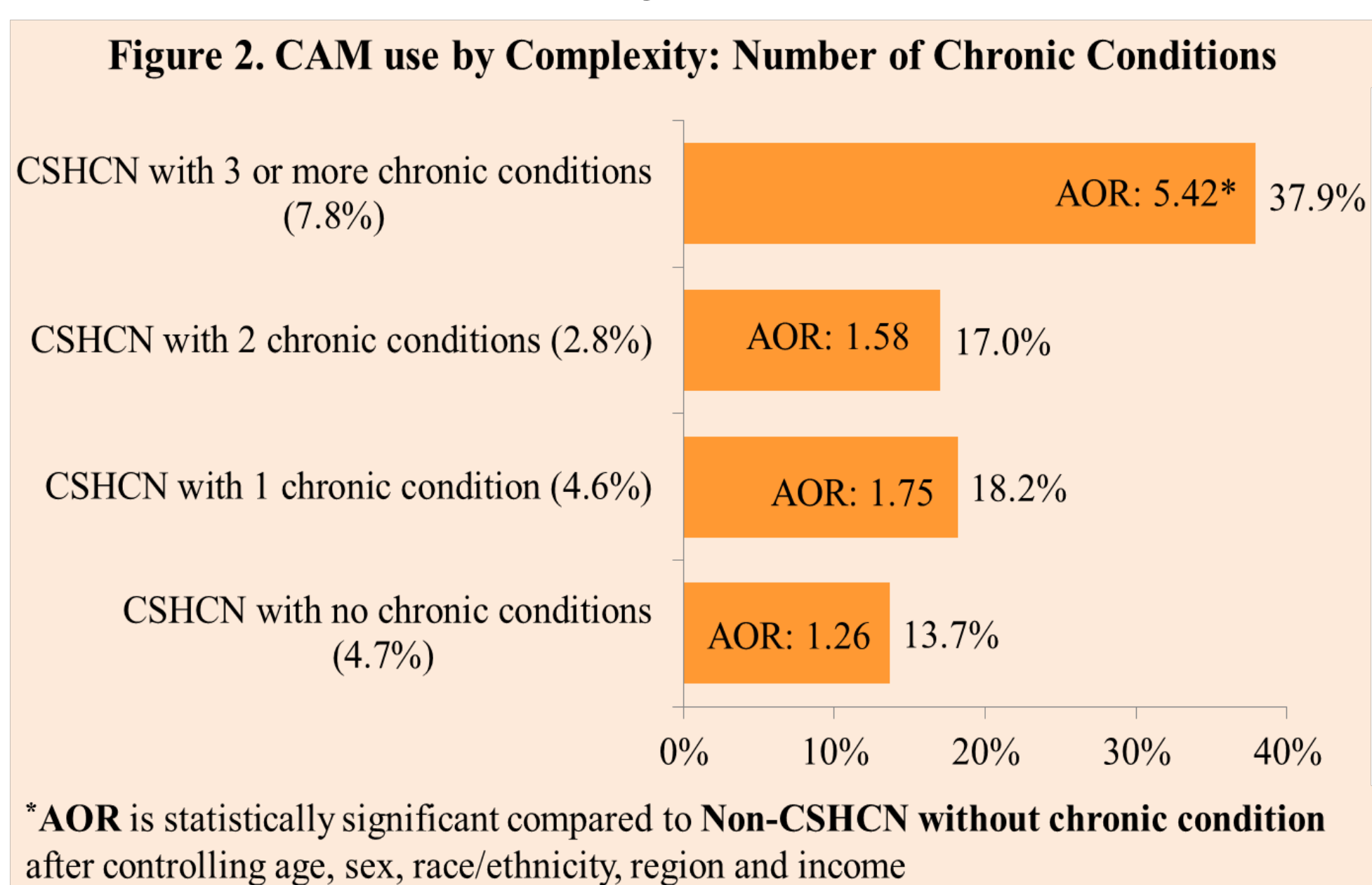
- Uni- and bivariate analyses
- Multivariate analyses to calculate adjusted odds ratios (AOR), controlling for CSHCN complexity and demographic characteristics
- Standard two-part regression model analyses for MEPS expenditures data
- All data weighted to represent the US child population

Table 1. CAM Modality Groups in 2007 NHIS Child CAM Supplement⁵

- Alternative Medical Systems (e.g., acupuncture, homeopathy)
- Biologically Based therapies (e.g., herbs, special diets, vitamin supplements)
- Manipulative and Body-Based Therapies (e.g., chiropractic, craniosacral)
- Mind-Body Therapies (e.g., meditation, yoga, biofeedback)

Results: CAM Use

- CAM use is more prevalent among CSHCN (AOR 1.89, CIs: 1.26-2.84) (Figure 1) and children who meet criteria for the ACA-qualifying conditions compared to those without the health problems (AOR: 2.21, CIs: 1.73-2.82, 27.6% vs 13.5%)
- CAM use is more prevalent among CSHCN (AOR 1.89, CIs: 1.26-2.84) (Figure 1) and children who meet criteria for the ACA-qualifying conditions compared to those without the health problems (AOR: 2.21, CIs: 1.73-2.82, 27.6% vs 13.5%)
- Increased CAM use is seen in children with multiple chronic conditions (2 CC: AOR 1.58, 17%; 3+ CC, AOR 5.42, 37.9%) (Figure 2)



- CAM use is higher among:
 - CSHCN who meet criteria for the PCMH/ACA-qualifying conditions (AOR 2.81, CIs: 1.39-5.61; 31.8% vs. 14%) (Reference group: to Non-CSHCN who do not qualify for the criteria)
 - CSHCN who experience difficulties in daily activities or functioning from the list of 8 difficulties (AOR 3.77, CIs: 2.31-6.14; 34.8% vs. 13.0%) (Reference group: Non-CSHCN with no functional difficulties)
 - The rate is even higher among CSHCN who have more complex needs and experience functional difficulties (AOR 4.19, CIs: 36.4%-12.4%)

Results: Conventional Health Care Utilization and CAM Use

- CSHCN not receiving care within a medical home were more likely to use CAM (Figure 4)
- CSHCN CAM users were less likely to meet criteria across nearly all sub-domains of the medical home compared to CSHCN non-CAM users (e.g., CSHCN who do NOT experience shared decision making are more likely to use CAM) (Figure 5)

Figure 4. Prevalence of CAM use and medical home criteria

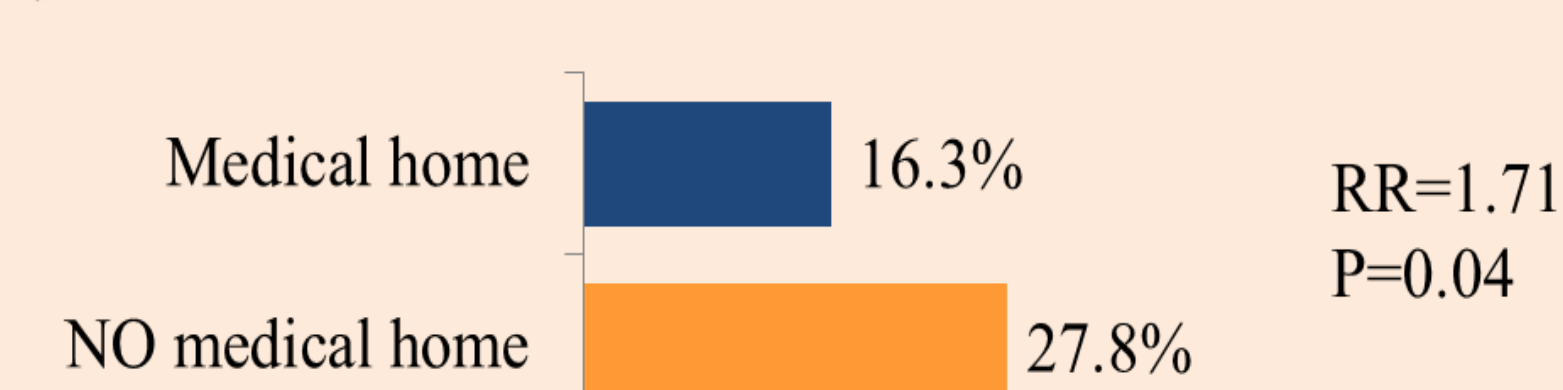


Figure 5. Prevalence of CAM use among CSHCN and decision making

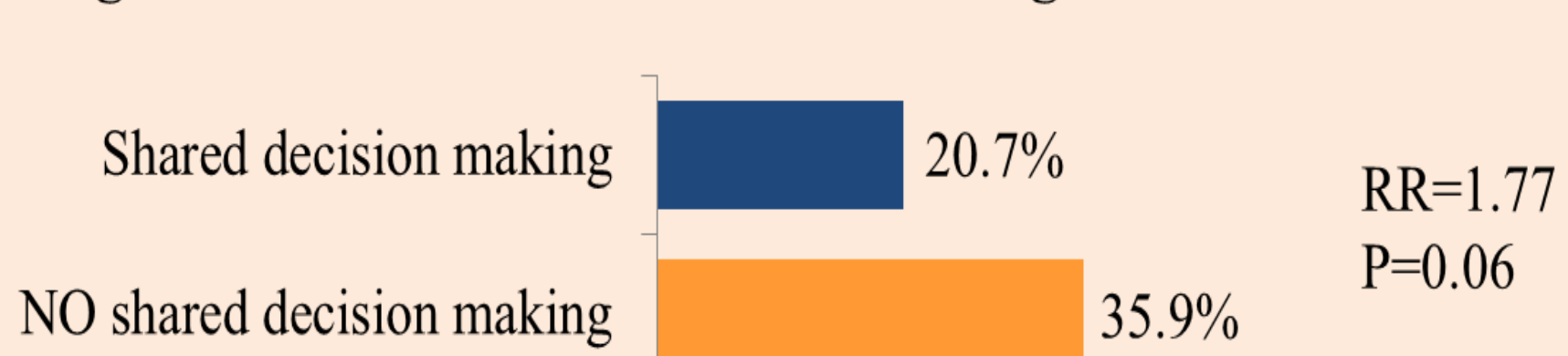
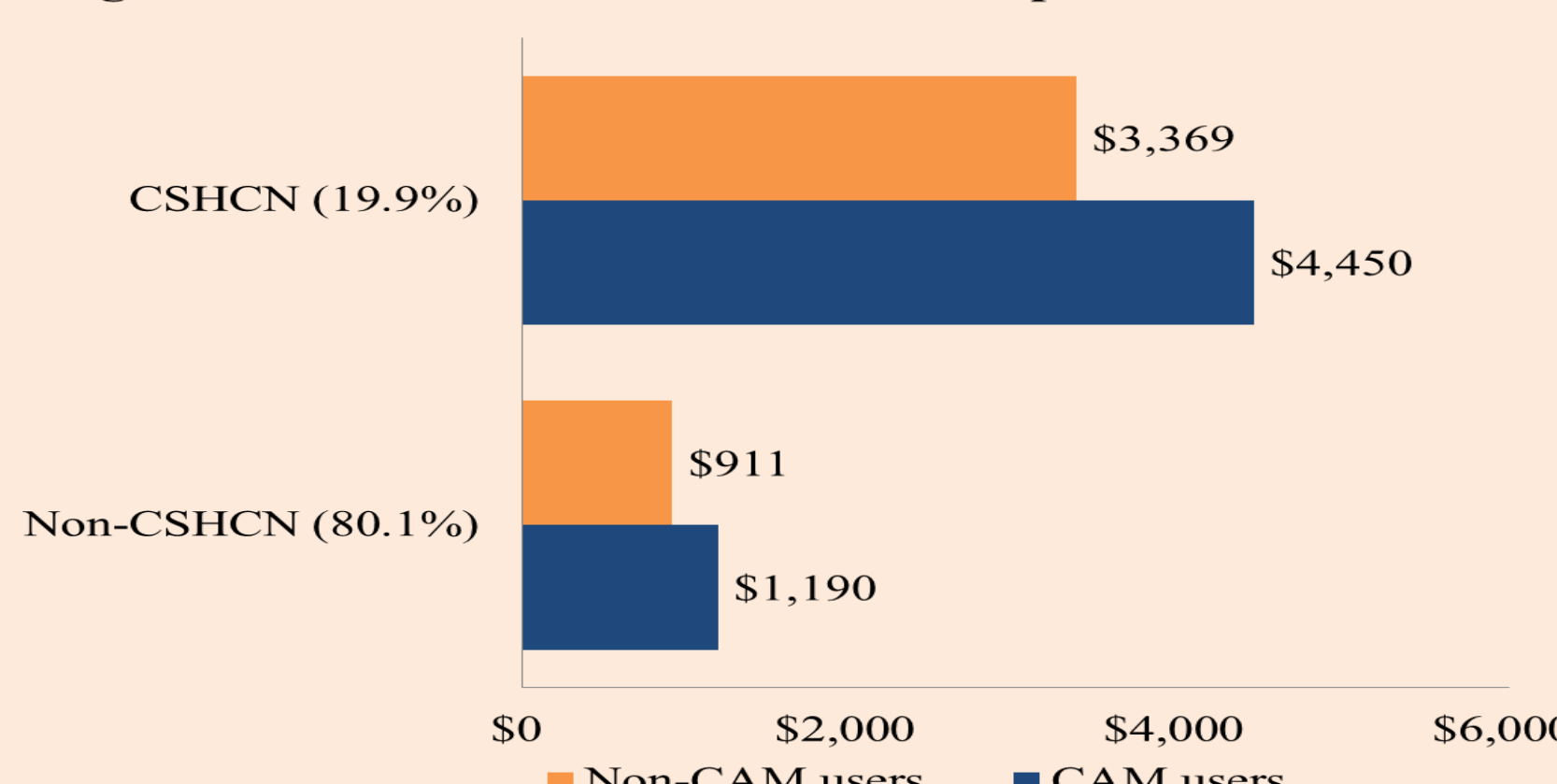


Figure 6. Conventional Medical Care Expenditures



- **45.8%** of children with chronic conditions have parents who did not tell the child's providers about their child's use of CAM
WHY? Most common reasons for not disclosing CAM use:
 - The provider did not ask (**55.7%**)
 - Parents did not think the provider needed to know (**42.2%**)

- Mean adjusted CMC expenditures for CAM users are significantly higher than for non-CAM users; the highest expenditures were reported for CSHCN who qualify on ACA criteria and use CAM (Figure 6)

Discussion and Conclusions

Are parents of CSHCN seeking out CAM providers for reasons related to poor patient engagement and communication with Conventional Medical Care?

CAM use is associated with: **Complexity and intensity** of children's health conditions and service needs **Difficulties in accessing** and **poorer quality of conventional medical care**

Children with complex health problems receive multiple forms of conventional, complementary and alternative care, emphasizing the **need for well integrated and coordinated pediatric care systems** within the context of a **medical home**.

Study Limitations

CAM use may be underestimated
Some CAM modalities (e.g. prayer, music therapies) are not included in the 2007 and 2012 NHIS CAM Supplement
CAM use for specific conditions may have been underreported if children using CAM modalities for overall health and well-being did not report CAM usage also for a particular condition
Sample size in linked NHIS/MEPS File prevents further subgroup analysis and likely Type 2 errors
Question inconsistencies between surveys (e.g. specialist care, hospitalization, etc.) limited our ability to assess the impact of CAM use on children's health and health outcomes, such as functional limitations, missed school days and others

References

1. Newacheck PW, Kim SE. A national profile of health care utilization and expenditures for children with special health care needs. *Arch Pediatr Adolesc Med.* 2005;159(1):10-7.
2. Chevarley FM. Research Findings No. 24: Utilization and Expenditures for Children with Special Health Care Needs. 2006. Available at: <http://meps.ahrq.gov/mepsweb/data_files/publications/rf24/rf24.pdf>.
3. Bethell CD, Read D, Stein RE, Blumberg SJ, Wells N, Newacheck PW. Identifying children with special health care needs: development and evaluation of a short screening instrument. *Ambul Pediatr.* 2002;2(1):38-48.
4. Oregon Health Authority. "Diagnosis Codes for ACA-Qualified Conditions" from Patient-Centered Primary Care Home Program. Updated March 7, 2012.
5. Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children: United States, 2007. *National Health Statistics Report;* 2008;12:1-23.