School- Based Health Evaluation: An Interactive Workshop

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Presenter Disclosures

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(1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose

Objectives

- To discuss what key publications from the literature have shown about SBHC
- To identify a question from your own SBHC experience & plan an evaluation to address that question
- To compare qualitative & quantitative evaluation

Biostatistics: A Brief Overview

- Descriptive
- Inferential
- Variables
- Design
- Analyses

Biostatistics

- Descriptive
- Inferential

Variables

- Discrete or categorical
  - Nominal
  - ordinal
- Continuous
  - Interval
  - ratio
- Dependent / Independent
- Qualitative / Quantitative

Analyses

- Univariate - descriptive
- Bivariate - inferential
- Multivariate - inferential

Univariate Analyses

- Descriptive
- Qualitative (categorical or discrete)
  - Nominal
  - Ordinal
- Quantitative (continuous)
  - Interval
  - Ratio

Qualitative Variables

- Discrete
- Proportions
- Confidence intervals
- +/- an interval

Quantitative Variables

- Continuous
- Means
- Standard deviations
- Ranges

Normal Distributions

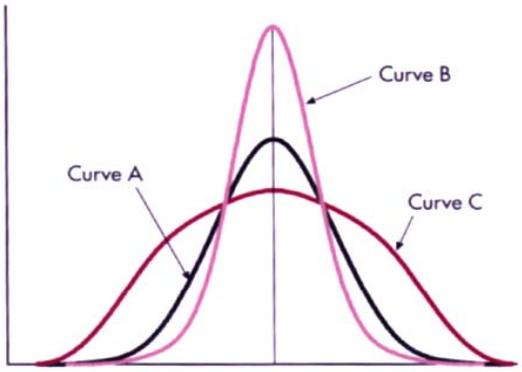


FIGURE 3–5
Three distributions differing in terms of *kurtosis*.

Central Tendency & Dispersion

- Mean
- Median
- Mode
- Standard deviation
- Range
- Interquartile range

Skewed Distribution

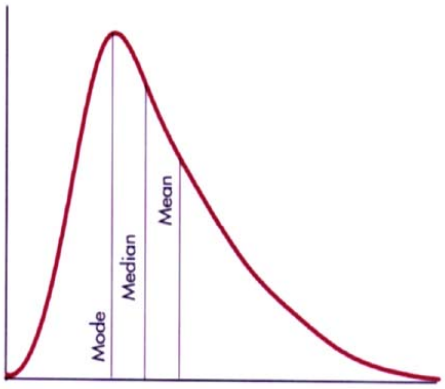


FIGURE 3–9
The mean, median, and mode in a skewed distribution.

Bivariate Analyses

- Parametric statistics
  - Continuous variables
  - Think bell-shaped curve & statistics using parameters of a normal distribution
- Non-parametric statistics
  - Categorical variables
  - Think proportions, histograms, chi-square

Multivariate Analyses

- Sounds good!
- Get a biostatistician!!!!
- Would you want me managing your father's incipient stroke??

Strength of Causal Relationship

- Is the association strong?
- Is there a temporal relationship?
- Is there a dose-response relationship?
- Is the relationship biologically plausible?
- Is the association specific?

SBHC Research & Evaluation

- Addresses questions that arise in clinical practice
- Has practical application
- Uses rigorous scientific methods
- Results inform the practice

SBHC Research & Evaluation

- Being creative
  - Recognize question(s)
  - Devise approach(es) to get the answer
- Using good judgement
  - Good science versus what's practical
- Common sense
  - Re: design, sample size, data

Study Designs

- Cross-sectional survey
- Prospective survey
- Pre- post study
- Cohort study
- Case-control study
- Randomized clinical trial

Continuous Quality Improvement

Steps in the PDSA Cycle

- **Plan:** Consider the question, the test of observation and the data collection
- **Do:** Try out the test on a small scale
- **Study:** Set aside time to analyze the data
- **Act:** Refine the change

Steps in the PDSA Cycle: Plan

- Plan the test or observation and the data collection
  - State the objective of the test
  - Make predictions about what will happen and why
  - Develop a plan to test the change
  - Determine what data are needed

Steps in the PDSA Cycle: Do

- Try out the test on a small scale
  - Carry out the test
  - Document problems and unexpected observations
  - Begin analysis of the data

Steps in the PDSA Cycle: Study

- Set aside time to analyze the data
  - Complete the analysis of the data
  - Compare the data to your predictions
  - Summarize and reflect on what was learned

Steps in the PDSA Cycle: Act

- Refine the change
  - Determine what modifications should be made
  - Prepare a plan for the next test

Process of Program Evaluation

- Step 1: state program objective(s)
- Step 2: select services necessary to accomplish objective(s)
- Step 3: select variables
- Step 4: select methods of data collection & study design
- Step 5: interpret results

Process of Program Evaluation

- Step 1: State program objective(s)
  - Clear
  - Achievable
  - measurable

Process of Program Evaluation

- Step 2: select services necessary to accomplish objective(s)
  - Service is part of the program
  - Service is related to objective
  - Service is discrete

Process of Program Evaluation

- Step 3: select variables
  - Measures of the problem
  - Measures of the process(es) or output(s)
  - Measures of the outcome(s)

Process of Program Evaluation

- Step 4: select methods of data collection & study design
  - Established forms of data collection
    - Other evaluation projects
    - Data collection for other purposes
  - *De novo* forms of data collection
  - Pre – post study design
  - Comparison with another program / setting
  - Controlled trial

Process of Program Evaluation

- Step 5: interpret results
  - Who is your audience?
  - Was the service delivered?
  - Were the objectives met & to what degree?
  - What are the implications for the service?

Audiences for Evaluation

- SBH team: for quality improvement
- Administration: for reimbursement
- Parents: for access & spectrum of care
- School administrators: for attendance
- State Department of Health: for accountability

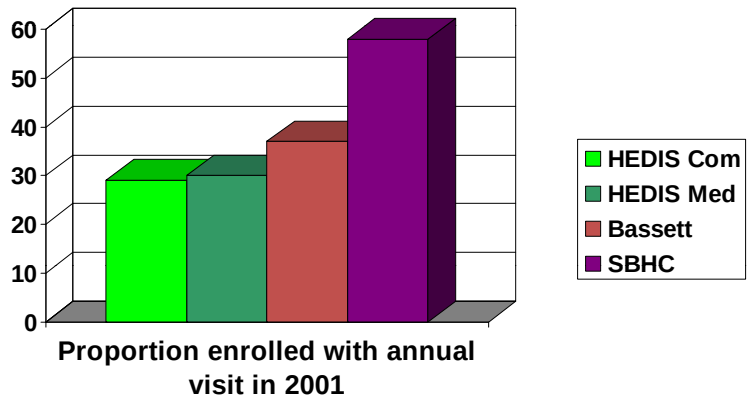
School-Based Health Centers: Outcomes

- **↓ Emergency Room use**
- **↓ Hospitalization rate**
- **↓ Absenteeism**
- **↑ Comprehensive Physical Exams**
- **↑ Access to care**
- **No evidence to suggest impact on academic outcomes**

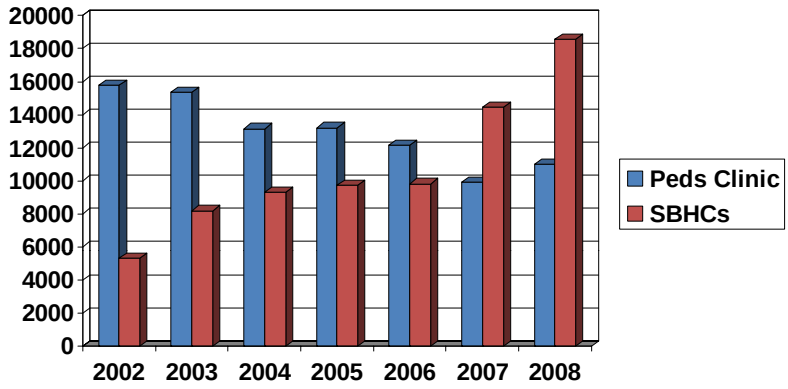
Adolescent Annual Visits

- Obtained lists of all adolescents with Bassett PCPs from MCO
- Calculated the proportion who had had CPE
- Compared SBHC rate to all-Bassett rate and then to national rates

Adolescent Annual Visits



Child and Adolescent Visits



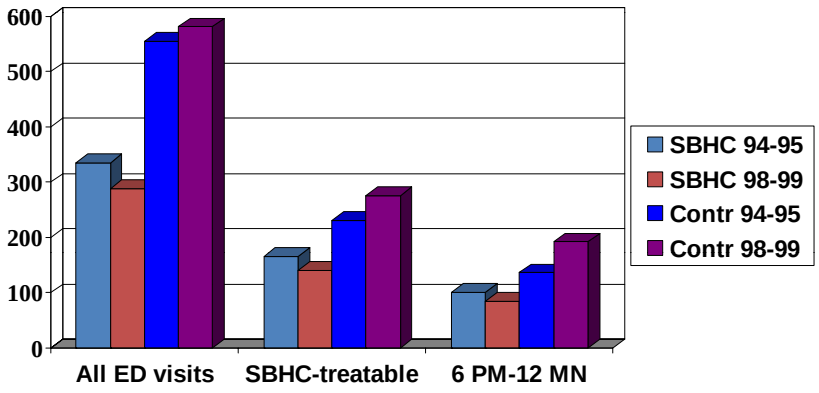
School-Based Health and Academic Outcomes

- Accountability, especially since “No Child Left Behind”
- Violates Step 2: service relates to objective
- Rx for B+ in algebra- doesn’t work
- Published reports show that SBHCs ↓ absenteeism

SBHCs: Impact on ED Visits

- Used Bassett ED only
- Selected two control schools
- Visits classified by Zipcode
- Stratified by severity and time of day
- Compared year before and two years after opening of SBHC (pre-/post, intervention/control)

SBHCs: Impact on ED Visits



SBH Evaluation in Progress

- Spirometry for asthma care in SBHC
- Bassett HealthCare “market share”
- Downstream visits as a result of SBHCs

Spirometry for Asthma in SBHCs

- New NHLBI guidelines for asthma care recommend spirometry
- Telehealth technology allows spirometry in SBHCs
- Pre & post – comparison procedure codes using IDX data

Bassett "Market Share"

- Adolescent annual exams used as a proxy for "market share"
- Census data used to estimate adolescent universe
- Pre - & post- proportions compared
- IDX data used

SBHC Downstream Visits

- Annual exams used to generate SBHC population
- Bill areas compared pre - & post- SBHC using IDX data
- Visit volumes uses as a proxy for 'downstream revenues'

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