Appendix A

Guide to Community Preventive Services

The systematic review in this report was conducted under the oversight of the independent, nonfederal, unpaid Community Preventive Services Task Force (the Task Force). The Task Force continues to develop, expand, and update the Guide to Community Preventive Services (The Community Guide) with the support of DHHS in collaboration with public and private partners. CDC provides staff support to the Task Force for development of The Community Guide. Previous topics reviewed, as well as background information on methods and development of The Community Guide, are available at www.thecommunityguide.org.

The Systematic Review Development Team

The review team was made up of three subgroups: (1) The coordination team, which drafted the analytic framework for reviews; managed the data collection and review process; and drafted evidence tables, summaries of evidence, and reports; (2) The consultation team, which reviewed and commented on materials developed by the coordination team and set priorities for this review; and (3) The abstraction team, which collected and recorded data from studies for possible inclusion in the systematic review.
Appendix B

Search Strategy

This literature search was performed to provide a systematic review of the evidence to The Community Guide.

Eight databases (PubMed, Embase, CINAHL, ERIC, Google, NTIS, Web of Science [WOS], and WorldCat) were searched in March 2013 and again in July 2014, using the search terms listed below. The databases searched covered publications in biomedical sciences, education, and behavioral sciences. The types of documents searched in the databases included journal articles, books, book chapters, reports, websites, and conference papers. Search results are combined in the search tree figure (see Search Results, below).

Search terms and search strategies were adjusted to each database, based on controlled and uncontrolled vocabularies and search software. Plurals, hyphenated, non-hyphenated, and British spellings were searched for each term.
Search Results

This figure (which also appears in the main document as Figure 2) shows the results of the search process.

<table>
<thead>
<tr>
<th>Steps in the Search Process</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad search of all potentially relevant articles from electronic databases (Beginning of database–July 2014)</td>
<td>10,371</td>
</tr>
<tr>
<td>Papers potentially relevant to this topic</td>
<td>554</td>
</tr>
<tr>
<td>Candidate intervention studies</td>
<td>230</td>
</tr>
<tr>
<td>Intervention studies meeting inclusion/exclusion criteria</td>
<td>50</td>
</tr>
<tr>
<td>Included studies</td>
<td>46</td>
</tr>
</tbody>
</table>

Descriptive of Databases Searched

**CINAHL (EBSCOHOST)**

- indexing for more than 3,000 journals from the fields of nursing and allied health
- more than 2.3 million records
- years covered: 1981 – current

**Embase (OVID)**

- indexing for more than 3,500 international journals in the following fields: drug research, pharmacology, pharmaceutics, toxicology, clinical and experimental human medicine, health policy and management, public health, occupational health, environmental health,
Appendix

School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review

Knopf et al.

drug dependence and abuse, psychiatry, forensic medicine, and biomedical engineering/instrumentation

- selective coverage for nursing, dentistry, veterinary medicine, psychology, and alternative medicine
- Years covered: 1974 – current

**ERIC (ProQuest)** - The ERIC (Education Resources Information Center) database

- sponsored by U.S. Department of Education to provide extensive access to educational-related literature
- provides coverage of journal articles, conferences, meetings, government documents, theses, dissertations, reports, audiovisual media, bibliographies, directories, books and monographs

**Google**

- web search engine (includes Google Scholar, which covers journal articles)

**NTIS (ntis.gov)**

- largest central resource for government-funded scientific, technical, engineering, and business related information available
- years covered: 1964 – current
**PubMed** (pubmed.gov)

- comprises more than 22 million citations for biomedical literature from MEDLINE, life science journals, and online books
- Citations may include links to full-text content from PubMed Central and publisher websites
- Years covered: 1946 – current.

**Web of Science** (Web of Knowledge – Thomson Reuters)

- comprises world’s leading scholarly literature in the sciences, social sciences, arts, and humanities and examine proceedings of international conferences, symposia, seminars, colloquia, workshops, and conventions.

**WorldCat** (worldcat.org)

- world's largest library catalog
- contains millions of books, reports, conferences, dissertations, theses, audiovisuals, electronic publications, and articles from the past few centuries
Search Strategies Used in Each Database

Database: PubMed

Searched on 7/9/2014

Results: 1,578

PubMed search strategy

((("2013/03/12"[Date - Entrez] : "3000"[Date - Entrez]) AND ( "2013/01/01"[PDat])
"2015/12/31"[PDat])) AND ((((((("School Health Services"[Mesh] AND (English[lang]))
AND "united states"[mesh] AND (English[lang]))) OR ((((((((("school located
immunization programs" OR "school located influenza vaccination" OR "school located mass
influenza" OR "school located mass vaccination")) AND (English[lang]))) OR ("school located
vaccination" AND (English[lang]))) OR ((("school dental care" OR "school dental clinic" OR
"school dental clinics" OR "school dental health" OR "school dental hygiene" OR "school dental
inspection" OR "school dental inspections" OR "school dental medicine" OR "school dental
nurse" OR "school dental nurses" OR "school dental personnel" OR "school dental program" OR
"school dental programme" OR "school dental programmes" OR "school dental programs" OR
"school dental scheme" OR "school dental screening" OR "school dental screenings" OR "school
dental sealant program" OR "school dental service" OR "school dental services" OR "school
dental therapist" OR "school dental therapists" OR "school dental treatment" OR "school dentist"
OR "school dentistry" OR "school dentists") AND (English[lang]))) OR ((("school dentist" OR
"school dentistry") AND (English[lang]))) OR ("council on school health" AND
(English[lang]))) OR ("sbhcs" AND (English[lang]))) OR ("sbhcs" AND (English[lang]))) OR
((("school clinic" OR "school clinics") AND (English[lang]))) AND ((("school health based"
OR "school health based parasite control" OR "school health care")) AND (English[lang])))

American Journal of Preventive Medicine
Appendix
School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
Knopf et al.

AND ("school mental" AND (English[lang]))) AND ((("school nurse" OR "school nurses")) AND (English[lang]))) OR ((("school physician" OR "school physicians")) AND (English[lang]))) OR ((("school wellness" OR "school wellness policies" OR "school wellness policy" OR "school wellness policy implementation")) AND (English[lang]))) OR ((("school based adolescent health" OR "school based adolescent health care" OR "school based adolescent health care program" OR "school based adolescent hepatitis" OR "school based adolescent hepatitis b" OR "school based adolescent hepatitis b vaccination")) AND (English[lang]))) OR ("school based adolescent health" AND (English[lang]))) OR ((("school based adolescent health" OR "school based adolescent health care" OR "school based adolescent health care program" OR "school based adolescent hepatitis" OR "school based care" OR "school based caries prevention" OR "school based caries preventive" OR "school based centers" OR "school based cervical cancer education" OR "school based cessation program" OR "school based chemotherapy" OR "school based child sexual abuse prevention" OR "school based childhood obesity" OR "school based chlamydia control program" OR "school based chlamydia screening" OR "school based clinic" OR "school based clinical practice" OR "school based clinicians" OR "school based clinics" OR "school based community intervention" OR "school based condom availability" OR "school based condom distribution" OR "school based condom education" OR "school based control program"*" OR "school based dental care" OR "school based dental clinic" OR "school based dental clinics" OR "school based dental health" OR "school based dental program" OR "school based dental screening" OR "school based dental sealant" OR "school based dental services" OR "school based depression prevention program" OR "school based depression screening" OR "school based deworming" OR "school based diabetes care" OR "school based diabetes mellitus

American Journal of Preventive Medicine
Appendix
School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
Knopf et al.

prevention program" OR "school based dietary intervention") AND (English[lang])) OR
("school-based asthma" AND (English[lang])) OR ("school-based care" AND (English[lang]))
AND (English[lang]) AND (English[lang])) NOT ((((((("Developing Countries"[Mesh]) OR
"Latin America"[Mesh]) OR "Asia"[Mesh]) OR "Mexico"[Mesh]) OR "Central
America"[Mesh]) OR "South America"[Mesh]) OR "Africa"[Mesh] AND (English[lang])) AND
(English[lang])) NOT (brazil OR brasil AND (English[lang]))

Database: ERIC

Searched on 7/10/2014

Results: 54

ERIC search strategy:
2013-2014
"school based health center*" OR SBHC or SBHCs OR "school based health clinic*" OR
"school clinic" OR "school clinics" OR "school health clinic*" OR "school health centre*" OR
"school health center*"

Database: Embase (OVID)

Searched on 7/9/2014

Results: 46

(school-based-health-center* or school-based-health-centre* or school-based-health-clinic* or
sbhc or sbhcs or school-health-service*).ti,kw.tw.

AND

("201312" or "201313" or "201314" or "201315" or "201316" or "201317" or "201318" or
"201319" or "201320" or "201321" or "201322" or "201323" or "201324" or "201325" or
Appendix
School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
Knopf et al.

"201326" or "201327" or "201328" or "201329" or "201330" or "201331" or "201332" or "201333" or "201334" or "201335" or "201336" or "201337" or "201338" or "201339" or "201340" or "201341" or "201342" or "201343" or "201344" or "201345" or "201346" or "201347" or "201349" or "201350" or "201351" or "201352" or "201401"}.em.
Database: CINAHL
Searched on 7/9/2014
Results: 21
CINAHL search strategy:
S9 S7 AND S8
S8 Limiters - Published Date: 20130401-20151231
S7 S1 OR S2 OR S3 OR S4 OR S5 OR S6
S6 (TX "school located")
S5 TX (sbhc or sbhcs)
S4 TX ("school based health centre" or "school based health centres" or "school health centre" or "school health centres")
S3 TX ("school based health clinic" or "school based health clinics" or "school based clinic" or "school based clinics" or "school based clinical" or "school health clinic" or "school health clinics")
S2 (TX "school based primary care")
S1 TX ("school based health center" or "school based health centers")

Database: Google
Searched on: 7/10/2013
Results: 5
"school based health centers" +2014

Database: NTIS
Searched on 7/10/2014
Results: 0
Google search strategy:

[Advanced Search - exact phrase searches – each run separately]

Since 2013

school based health center
school based health centers
SBHC
SBHCs
school based health clinic
school based health clinics
school clinic
school clinics
school health clinic
school health clinics
school health centre
school health centres
school health center
school health centers
school health service
school health services

*Database: WoS (Web of Science)*

Searched on 7/10/2014

Results: 209
WOS search strategy:


# 33 #32 OR #31 OR #27 OR #26 OR #23 OR #21 OR #17 OR #16 OR #15 OR #14 OR #13 OR #9 OR #8 OR #1

# 32 #31 OR #27 OR #26

# 31 #28 AND #11

# 30 #29 AND #28

# 29 #28 OR #11

# 28 TI=(strateg*)

# 27 #25 AND #24

# 26 TS="school based health service*"

# 25 #19 OR #11

# 24 TS=(study or studies)

# 23 #22 AND #19

# 22 TS=(eval* or success* or assess* or improv* or efficac* or combat* or recommend* or prevent* or interven* or trial or trials or program* or utility or progress* or solve or solving or result* or outcome* or predict* or benefi* or analys* or analyz* or pilot or random* or protect* or impact* or reduc* or lessen* or increas* or decreas* or amerliorat* or promis*)

# 21 #20 AND #19

# 20 TI=(eval* or success* or assess* or improv* or efficac* or combat* or recommend* or prevent* or interven* or trial or trials or program* or utility or progress* or solve or solving or result* or outcome* or predict* or benefi* or analys* or analyz* or pilot or random* or protect* or impact* or reduc* or lessen* or increas* or decreas* or amerliorat*)
# 19 Topic="school health service**")

# 18 Topic="school health service**") AND Title=(truant* or truancy or attendance or absent* or "missed school" or "missing school" or "miss school")

# 17 Topic="school nurse*" or "school physician*" or "school based doctor*" or "school based primary care" or "school based primary health care" or "school doctor"") AND Title=(truant* or truancy or attendance or absent* or "missed school" or "missing school" or "miss school")

# 16 #15 OR #14

# 15 TS="school dental care")

# 14 TS="school dental clinic*" or "school dental health" or "school dentist*" or "school based dental" or "school based dentist**")

# 13 Topic="school nurse*" or "school physician*" or "school based doctor*" or "school based primary care" or "school based primary health care" or "school doctor"") AND Title=(eval* or success* or assess* or improv* or efficac* or combat* or recommend* or prevent* or interven* or trial or trials or program* or utility or progress* or solve or solving or result* or outcome* or predict* or benefi* or analys* or analyz* or pilot or random* or protect* or impact* or reduc* or lessen* or increas* or decreas* or amerliorat*)

# 12 Topic="school nurse*" or "school physician*" or "school based doctor*" or "school based primary care" or "school based primary health care" or "school doctor"") AND Topic=(eval* or success* or improv* or efficac* or combat* or recommend* or prevent* or interven* or trial or trials or program* or utility or progress* or solve or solving or result* or outcome* or predict* or benefi* or analys* or analyz* or pilot or random* or protect* or impact* or reduc* or lessen* or increas* or decreas* or amerliorat*)
# 11 Topic=("school nurse*" or "school physician*" or "school based doctor*" or "school based primary care" or "school based primary health care" or "school doctor*")

# 10 Topic=("school located nurs*" or "school located physician*" or "school located health care" or "school located healthcare")

# 9 Topic=("school based nurs*" or "school based physician*" or "school based health care" or "school based healthcare")

# 8 #7 OR #6 OR #5 OR #4 OR #3 OR #2

# 7 Topic=("school clinic")

# 6 Topic=("school located health centre*") OR Topic=("school located health center*") OR Topic=("school health clinic*" or "school health centre*" or "school health center*")

# 5 Topic=("school located health clinic*")

# 4 Topic=("school based health clinic*")

# 3 Topic=("school-based health clinic*")

# 2 Topic=("school-based health centre*")

# 1 Topic=("school-based health center*")

Database: WorldCat

Date Searched: 7/10/2014

Results: 3

Since 2013

WorldCat search strategy:
"school based health center*" or "school based health clinic*" or sbhc or sbhcs or "school based dental clinic*" or "school dental clinic*" or "school based dental care"
Appendix Figure 1.

**Effects of School-Based Health Centers on Academic Outcomes:**

**High School Non-completion Rates**

<table>
<thead>
<tr>
<th>Author Year (Outcome, Baseline %)</th>
<th>Pre-post SBHC implementation</th>
<th>SBHC users vs non-users</th>
<th>SBHC users vs Community users</th>
<th>Favors Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edwards 77 (postpartum dropout rate, 45.0%)</td>
<td>Before-after</td>
<td>Cross-sectional</td>
<td>5 studies</td>
<td></td>
</tr>
<tr>
<td>Kerns 11§ (Dropout, NR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McCord 93 (dropout rate, 72.1%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnett 03 (drop out rate pregnancy and post-pregnancy school yr, 19.5%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setzer 92 (drop out rate among pregnant students, 57.5%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

§All data points collapsed to calculate one effect estimate for that study

Median: -29.1%
IQR: -53.9%, -14.8%
Appendix Figure 2.

Effects of School-Based Health Centers on Health-Related Outcomes: Immunization

Author Year, Vaccine (Baseline%)
Klosterman00 (67)
Zimmer-Gembeck97(34)
Allison07$, HepB (20.1)
Federico10$, HepB (83.9)
Federico10$, HepA (50.3)
Federico10$, Td (53.4)
Federico10$, Tdap (61.7)
Allison07$, Td booster (21.5)
Federico10$, IPV (84.9)
Federico10$, varicella (12.9)
Federico10$, MMR (82.9)
Federico10$, MCV4 (61.1)
Allison07$, flu (20.1)
Federico10$, HPV12,13 (18.1)
Federico10$, HPV16,18 (12.1)

SBHC vs. Non-SBHC
SBHC Users vs. Community Users

Median: 15.5 ppt pts
Range: -22, 26.1 ppt pts

Childhood Vaccines
Pre-Teen/Teen Vaccines

Favors Intervention

-30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40

Absolute Percent Point Change or Difference

$All data points collapsed to calculate one effect estimate for that study
Td: Tetanus, Diphtheria
Tdap: Tetanus, Diphtheria, Pertussis
IPV: Inactivated Polio Vaccine
MCV4: Meningococcal Conjugated Vaccine
MMR: Measles, Mumps, and Rubella
HPV: Human Papillomavirus

American Journal of Preventive Medicine
Appendix
School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
Knopf et al.

Appendix Figure 3.

Effects of School-Based Health Centers on Health-Related Outcomes:
Other Recommended† Preventive Screening/Counseling

Author Year (Outcome, BL)
Gibson 13§ (S/C Emotions, 12%)
Santell 96 (S/C Emotions, 18%)
Gibson 13§ (S/C Sex and/or birth control, 20%)
Barnett 03§ (S/C Depression/suicide, 7%)
Kaplan 98§ (S/C Emotional health, 2.9%)
Klein 07§ (S/C Feeling sad or hopeless, 18.1%)
Barnett 03§ (S/C Consistent condom use, 15%)
Kaplan 98§ (S/C Sexual activity, 31%)
Ethier 11 (S STI, 19.3%)
Kaplan 98§ (S/C STD risk, 12%)
Klein 07§ (S/C Pregnancy and STDs, 68.0%)
Kaplan 98§ (S/C Tobacco use, 17.2%)
Klein 07§ (S/C Cigarettes/smoking, 49.8%)
Kaplan 98§ (S/C Violence, 0.2%)
Klein 07§ (S/C Violence prevention, 38.7%)

§All data points collapsed to calculate one effect estimate for that study
† US Preventive Services Task Force and Community Preventive Services Task Force (intervention includes service, or equivalent to recommendation)

Median: 12.0 pct pts
IQR= 5.7, 45.1 pct pts

Absolute Percentage Point Change or Difference
Favors Intervention

American Journal of Preventive Medicine
Figure 4. Effects of School-Based Health Centers on Health-Related Outcomes: Having Regular Source of Health Care

Author Year (Baseline %)  
- Kiskir 96 (76.0%) 
- Gibson 13 (70.0%) 
- Hutchinson 12† (71.7%) 
- Lewin 97§ (usual medical care) 
  - Elementary school, 78.5% 
- Lewin 97§ (usual dental care) 
  - Elementary school (78.5%) 
  - Middle/high school (78.5%) 
- Lurie 01 (97.0%) 
- Silberberg 08§ 
  - Usual medical care (89.4%) 
  - Usual dental care (80.3%) 
  - Usual mental health care (64.4%) 
- Wade 05 (96.9%) 
- [Gibson 13 (84.0%)] 
- [Lewin 97 (usual dental care)] 
  - Middle/high school (78.5%) 
- [Wade 05 (98.8%)]

† Adjusted results 
§ All data points collapsed to calculate one effect estimate for that study 
[] Not included to calculate median

Relative Percent Change or Difference

Median: 2.2% 
Interquartile Range: -1.8%, 12.4%
Appendix Figure 5.

**Effects of School-Based Health Centers on Asthma-related Outcomes:**
Hospitalization, Emergency Department (ED) Use, and Morbidity

<table>
<thead>
<tr>
<th>Author Year</th>
<th>Year (%)</th>
<th>Type</th>
<th>Comparison</th>
<th>Relative Percent Change or Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webber 03</td>
<td>17.1%</td>
<td>After</td>
<td>SBHC vs non-SBHC</td>
<td>-100 to -80</td>
</tr>
<tr>
<td>Lurie 01</td>
<td>14.9%</td>
<td>Before</td>
<td>Pre-post SBHC implementation</td>
<td></td>
</tr>
<tr>
<td>Guo 05</td>
<td>7.1%</td>
<td>Cross-sectional</td>
<td>SBHC users vs Community users</td>
<td></td>
</tr>
<tr>
<td>Silberberg 08 (NR)</td>
<td>44.4%</td>
<td>ED Use</td>
<td>SBHC vs non-SBHC</td>
<td></td>
</tr>
<tr>
<td>Webber 03</td>
<td>34.6%</td>
<td>Pre-post</td>
<td>Pre-post SBHC Implementation</td>
<td></td>
</tr>
<tr>
<td>Guo 05</td>
<td>32.2%</td>
<td>SBHC vs non-SBHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Webber 03</td>
<td>72.6%</td>
<td>Morbidity</td>
<td>SBHC vs non-SBHC</td>
<td></td>
</tr>
<tr>
<td>Lurie 01</td>
<td>4.8 days/night*</td>
<td>Favors Intervention</td>
<td>Pre-post SBHC Implementation</td>
<td></td>
</tr>
</tbody>
</table>

*Number of days or nights in past 4 weeks child had asthma symptoms.

American Journal of Preventive Medicine
Appendix Figure 6.

Effects of School-Based Health Centers on Other Morbidity-Related Outcomes: Self-Reported Health Status

Author Year (Outcome, BL)
Britto 01§ % no chronic illness† (65.6%)
% health status excellent (28.5%)
Kisker 96 (% very good or excellent health, 55.0%)
Lewin 97§ Elementary School (% no physical health problems 26.0%)
Middle/high school (% no physical health problems 51.0%)
Silberberg 08§ % no medical condition (72.3%)
% no dental problems (89.7%)
[Lewin 97§] Elementary School (% no physical health problems 31.0%)
Middle/high school (% no physical health problems 61.0%)

SBHC vs non-SBHC
Median: -1.2%
Range: -17.4% to 5.6%

User vs Non-user
Favors Intervention

Relative Percent Change or Difference

American Journal of Preventive Medicine
Appendix Figure 7.

**Effects of School-Based Health Centers on Other Morbidity-Related Outcomes:**
**Self-Reported Mental Health**

- **Hutchinson12** *(feeling sadness last yr; 29.3%)*
  - Author Year: (Outcome, Baseline%)
  - Before-after w/ Comparison: 
  - Cross-sectional: 
  - SBHC vs. Non-SBHC: Median: -5.7%
  - Range: -31.6%, 8.9%

- **Lewin97§ (feeling sad/worried/stressed)*
  - Elementary schools (67.0%)
  - Middle/high school (74.0%)
  - SBHC Users vs. Non-Users

- **Gance-Cleveland05** *(1-4 mental health stressors; 16.9%)*
  - SBHC Users vs. Non-Users

- **Warren03** *(depression symptoms; 20%)*

- **[Lewin97 (feeling sad/worried/stressed)]**
  - Elementary schools (77.0%)
  - Middle/high school (42.0%)
  - Favors Intervention

§All data points collapsed to calculate one effect estimate for that study
[ ] Not included in calculation of median
Appendix

School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review

Knopf et al.

Appendix Figure 8.

Effects of School-Based Health Centers on Other Morbidity-Related Outcomes: Non-Asthma-Related Emergency Department (ED) Utilization and Hospitalization

Author Year (Outcome)|BL | Hospitalization | Emergency Department |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Britto 01</td>
<td>(BL)</td>
<td>29.7%</td>
<td></td>
</tr>
<tr>
<td>Gance-Cleveland 05</td>
<td>(BL)</td>
<td>18.4%</td>
<td></td>
</tr>
<tr>
<td>Gance-Cleveland 05</td>
<td>(Hospitalization)</td>
<td>0.8%</td>
<td></td>
</tr>
<tr>
<td>Hutchinson 12</td>
<td>(BL)</td>
<td>35.1%</td>
<td></td>
</tr>
<tr>
<td>Kaplan 99</td>
<td>(BL)</td>
<td>13.0%</td>
<td></td>
</tr>
<tr>
<td>Kirby 02</td>
<td>(avg # ED visit)</td>
<td>0.7%</td>
<td></td>
</tr>
<tr>
<td>Kisker 96</td>
<td>(avg # ED visit)</td>
<td>0.28%</td>
<td></td>
</tr>
<tr>
<td>Santelli 96</td>
<td>(BL)</td>
<td>37.0%</td>
<td></td>
</tr>
<tr>
<td>Santelli 96</td>
<td>(Hospitalization)</td>
<td>18.0%</td>
<td></td>
</tr>
<tr>
<td>Silberberg 08</td>
<td>(BL)</td>
<td>23.2%</td>
<td></td>
</tr>
<tr>
<td>Wade 05</td>
<td>(BL)</td>
<td>(NR)</td>
<td></td>
</tr>
<tr>
<td>Young 01§</td>
<td>(# of non-urgent ED visit)</td>
<td>44.0%</td>
<td></td>
</tr>
<tr>
<td>Young 01§</td>
<td>(# of urgent ED visit)</td>
<td>18.0%</td>
<td></td>
</tr>
<tr>
<td>Justaczk 03</td>
<td>(BL)</td>
<td>(NR)</td>
<td></td>
</tr>
<tr>
<td>Kaplan 98</td>
<td>(BL)</td>
<td>(55.5%)</td>
<td></td>
</tr>
<tr>
<td>Allison 07</td>
<td>(BL)</td>
<td>33.8%</td>
<td></td>
</tr>
<tr>
<td>Lewin 97§</td>
<td>(Elementary school (BL))</td>
<td>26.0%</td>
<td></td>
</tr>
<tr>
<td>[Wade 05</td>
<td>(BL)</td>
<td>28.5%</td>
<td></td>
</tr>
</tbody>
</table>

§All data points collapsed to calculate one effect estimate for that study
[] Not included in calculation of median

ED Median: -14.5%
IQLI: -33.8% to 4.6%
Hospitalization Average: -51.6%
Values: -86.9%, -16.3%

Favors Intervention

Relative Percent Change or Difference

American Journal of Preventive Medicine
Appendix Figure 9.

Effects of School-Based Health Centers on Risk Behaviors: Smoking

<table>
<thead>
<tr>
<th>Author Year, (Baseline%)</th>
<th>SBHC vs. Non-SBHC</th>
<th>SBHC Users vs. Non-Users</th>
<th>SBHC Users vs. Community Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hutchinson 12 (6.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby 91$†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dallas, TX (8.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gary, IN (21.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jackson, MS (14.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quincy, FL (6.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kisker 96 (9.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewin 97 (36.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robinson 03‡ (1.0 days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warren 03 (30.8%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klein 07 (14.3%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$All data points collapsed to calculate one effect estimate for that study
†Calculated from % never used
‡ # of days in past month used

Relative Percent Change or Difference

Median: 21%
IQR: -24.1%, 32.4%
Appendix Figure 10.

Effects of School-Based Health Centers on Risk Behaviors: Alcohol Use

<table>
<thead>
<tr>
<th>Author Year, (Baseline%)</th>
<th>SBHC vs. Non-SBHC</th>
<th>SBHC Users vs. Non-Users</th>
<th>SBHC Users vs. Community Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hutchinson12 (70.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby 91†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dallas, TX (41%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gary, IN (52%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jackson, MS (38%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quincy, FL (36%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kisker96 (36.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robinson03‡ (1.2 days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warren03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% beer, past 2 mon (37.2%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% liquor, past 2 mon (36.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klein07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% drank past month (29.1%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% w ≥5 drinks in a row, past month (42.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

%All data points collapsed to calculate one effect estimate
†Calculated from % never drank
‡ # of days drank in past month

Relative Percent Change or Difference

Median: -14.8%
IQR: -19.8%, -9.5%
Appendix Figure 11.

Effects of School-Based Health Centers on Risk Behaviors: Substance Use

Author Year, (Baseline%)

- Hutchinson12 (marijuana, 38.3%)
- Kisker96† (5%)
- Robinson03‡ (1.4 days)
- Kirby 91§ (Illegal Drugs)
  - Dallas, TX (10%)
  - Quincy, FL (4%)
- Warren 03 (marijuana, 19.7%)
- Warren 03 (illegal drugs, 4%)

§All data points collapsed to calculate one effect estimate
†Calculated from % never used
‡ # of days in past month used

SBHC vs. Non-SBHC

SBHC Users vs. Non-Users

Favors Intervention

-80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60

Relative Percent Change or Difference

Median: -27.2%
IQR: -48.2%, 13.6%
## Appendix
School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
Knopf et al.

### Figure 12.

#### Effects of SBHC on Contraception Use

<table>
<thead>
<tr>
<th>Author Year (Baseline %)</th>
<th>Baseline %</th>
<th>Study Type</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiser 96</td>
<td>(39.0%)</td>
<td>Before-after w/ Comparison</td>
<td>Females and males</td>
</tr>
<tr>
<td>Zimmer-Gembeck 97</td>
<td>(15.0%)</td>
<td>Before-after</td>
<td>7 studies</td>
</tr>
<tr>
<td>Warren 03</td>
<td>(62.3%)</td>
<td>Cross-sectional</td>
<td>SBHC vs. Non-SBHC</td>
</tr>
<tr>
<td>Klein 07</td>
<td>(70.6%)</td>
<td></td>
<td>SBHC Users vs. Community Users</td>
</tr>
<tr>
<td>Ethier 11 females $^+$</td>
<td>% using condom (12.4%)</td>
<td>SBHC vs. Non-SBHC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% using hormonal contraception (12.4%)</td>
<td>Females only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% using emergency contraception (1.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hutchinson 12 females $^+$</td>
<td>(34.0%)</td>
<td>SBHC vs. Non-SBHC</td>
<td>Females, Median: 17.8%</td>
</tr>
<tr>
<td>Kirby91 females $^+$</td>
<td>(28.0%)</td>
<td></td>
<td>Males only</td>
</tr>
<tr>
<td>Ethier 11 males $^+$</td>
<td>(71.1%)</td>
<td>SBHC vs. Non-SBHC</td>
<td>Males, Median: -3.1%</td>
</tr>
<tr>
<td>Hutchinson 12 males $^+$</td>
<td>(38.8%)</td>
<td></td>
<td>Favors Intervention</td>
</tr>
<tr>
<td>Kirby91 males $^+$</td>
<td>(40.0%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^+$All data points collapsed to calculate one effect estimate
$^*$Adjusted change

---

American Journal of Preventive Medicine
Appendix Figure 13.

Effects of SBHC on Sexual Activity

- Kisker 96 (% had sex in past month: 18.0%)
- Warren 03 (% ever had sex: 30.9%)
- Klein 07 (% ever had sex: 37.1%)
- Hutchinson 12 (% ever had sex: 48.9%)
- Kirby 91 ($\#$ times had sex past 4 weeks: 2.6 times)
- Hutchinson 12† (% ever had sex: 74.3%)
- Kirby 91† ($\#$ times had sex past 4 weeks: 3.3 times)

Females and males
- Females and males
  - Median: 19.6%
  - Range: 0.9%, 83.2%

Females only
- Females
  - Mean: −3.6%

Males only
- Males
  - Mean: −8.5%

6All data points collapsed to calculate one effect estimate
†Adjusted estimate
Figure 14.

Effects of SBHC on Pregnancy Outcomes

- **Author Year (Outcome, BL)**
  - Ricketts et al. (Births/100 AA girls, 160/1000)
  - Kisker (Ever pregnant, 5.0%)
  - Kirby93† (Birthrate/1000 students) [22/1000]
  - Kirby91§ (% pregnant, past yr, 14.0%)
  - Edwards77 (Fertility rate/1000 students) [80/1000]
  - Kirby91§ (% caused pregnancy, past yr, 8.5%)

- **Relative Percent Change or Difference**
  - Favors Intervention
  - **SBHC vs. Non-SBHC**
  - **Before-after w/ Comparison**
  - **Before-after**
  - **Cross-sectional**

- **Female**
  - Median: -40.0%
  - IQR: -47.5%, 17.6%

- **Male**

---

§All data points collapsed to calculate one effect estimate
†Weighted for number of female students in school

*American Journal of Preventive Medicine*
Appendix

School-Based Health Centers to Advance Health Equity: A Community Guide Systematic Review
Knopf et al.

Appendix Figure 15.

Effect Modification (Secondary Research Question): Impact of Hours of Availability on Hospitalization and Emergency Department (ED) Use

Author Year (Metric, BL)
- Guo 05 (avg # ED visit, NR)
- Guo 05 (Hospitalization, NR)
- Kirby 94- Dallas (avg # ED visit, 0.46)
- Kirby 94- Gary (avg # ED visit, 0.44)
- Kirby 94- Jackson (avg # ED visit, 0.38)
- Kirby 94- Muskegon (avg # ED visit, 0.7)
- Kirby 94- Quincy (avg # ED visit, 0.57)
- Kirby 94- San Fran (avg # ED visit, 0.35)
- Kisker 86 (avg # ED visit, 0.49)
- Webber 03 (avg # ED visit, 44.4)
- Webber 03 (Hospitalization)
- Allison 07 (avg # ED visit, 33.8)
- Jusczak 03 (avg # ED visit, NR)
- Kaplan 96 (avg # ED visit, 55.5)
- Santelli 96 (avg # with visit for asthma, 39)
- Santelli 96 (Hospitalization, NR)

Relative Percent Change or Difference

Regular School Hours
- Hospitalization
- Emergency Department

Extended Hours
- Hospitalization
- Emergency Department

Favors intervention

8 studies

Median: −5.2%

Median: −37.0%

5All data points collapsed to calculate one effect estimate
avg, average; BL, baseline; NR, not reported

American Journal of Preventive Medicine
Appendix Figure 16.

**Effects Modification (Secondary Research Question):**
Contraception Use Stratified by On-site vs. Off-site Access to Contraception

<table>
<thead>
<tr>
<th>Author Year (outcome) (BL)</th>
<th>On-site, female: 32.6%</th>
<th>On-site, male: 5.4%</th>
<th>Off-site, female: 22.2%</th>
<th>Off-site, male: 32.8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethier11† (7.1%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby91§†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dallas (32.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quincy, FL (29.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jackson, MS (30.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby91§†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gary, IN (23.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muskegon, MI (27.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Francisco (18.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby91§†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dallas (33.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jackson, MS (39.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quincy, FL (57.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby91§†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gary, IN (52.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muskegon, MI (41.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Francisco (29.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zimmer-Gembeck01 (38.0%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

§All data points collapsed to calculate one effect estimate for that study
†Weighted for number of female students in school

Relative Percent Change or Difference

-100 -80 -60 -40 -20 0 20 40 60 80 100 120 140
### Effects Modification (Secondary Research Question):

#### Pregnancy Outcomes Stratified by On-site vs. Off-site Access to Contraception

<table>
<thead>
<tr>
<th>Author Year (outcome) (BL)</th>
<th>% pregnant, past yr</th>
<th>Location</th>
<th>On-site distribution</th>
<th>Off-site distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kirby91†</td>
<td>(Female)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% pregnant, past yr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dallas (10.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quincy, Fl (10.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jackson, MS (12.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ricketts 06</td>
<td>Birthrate/1000 girls</td>
<td>(160/1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby93†</td>
<td>(Female)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% pregnant, past yr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gary, IN (20.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muskegon, MI (14.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Francisco (10.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edwards 77</td>
<td>Fertility rate per 1000 female students</td>
<td>(80/1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby91†</td>
<td>% caused pregnancy, past yr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dallas (7.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quincy, Fl (7.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kirby91</td>
<td>% caused pregnancy, past yr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gary, IN (7.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muskegon, MI (8.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Francisco (10.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith 11</td>
<td>Pregnancy among those no prior pregnancy</td>
<td>(21.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith 11</td>
<td>Pregnancy rate among total sample</td>
<td>(20.0%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- All data points collapsed to calculate one effect estimate
- †Weighted for number of female students in school

#### Relative Percent Change or Difference

![Graph showing relative percent change or difference for on-site and off-site distribution for female and male populations.](image-url)