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Neighborhood effects on sexual and reproductive health: A review of the literature

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Background

Recent epidemiological studies have demonstrated the importance of neighborhood environment to a variety of individual health risks and outcomes. The increasing use of multilevel statistical models recognizes the existence of heterogeneity within and between communities and makes use of natural community-level clustering to explain variation in health outcomes. Ultimately such research would inform novel and innovative multilevel interventions to improve sexual and reproductive health.

Methods

We reviewed the literature on neighborhood effects on sexual and reproductive health to inventory specific research questions pursued, methodologies used, and current research findings.

- Searches in PubMed and POPLINE with Keywords: ("sexual behavior," "contraception," "family planning," "unwanted pregnancy," "unintended pregnancy", "fertility", OR "intimate partner violence") AND ("neighborhood," "contextual," "multilevel," or "community")
- All studies are quantitative, US or International, in English language, and published between January 1985 and February 2011
- Excluded articles that examined sexual and reproductive health outcomes only as mediators, school-based studies, qualitative studies, maternal and child health, MSM, and HIV related outcomes

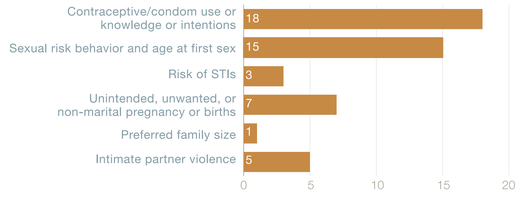
Results

Our search yielded 36 studies that matched our inclusion criteria.

Sexual and reproductive health outcomes

All studies sought to examine whether community or environmental conditions affected the sexual and reproductive health outcomes of interest. We classified articles into these outcome categories:

Fig. 1. Outcome categories



Neighborhood constructs *(see Figure 2)*

- Grouped common neighborhood characteristics into 8 larger constructs
- Classified each analysis by key outcomes and neighborhood constructs
- Identified 93 unique analyses across 8 constructs and 6 outcomes

Figure 2. Neighborhood constructs and measures *(number and % of studies)*

Structural disadvantage/social disorganization: 9 (25%)
- Immigration concentration
- Broken windows index
- Neighborhood quality index
- Residential mobility
- Home ownership
- High- or low-risk neighborhoods

Demographic composition: 12 (33%)
- Sex ratio
- Religiosity
- Urbanization
- Population density
- Racial composition/segregation

Socioeconomic status/economic disadvantage: 27 (75%)
- Unemployment
- Education
- Poverty/concentration of poverty
- Public assistance
- Female-headed households
- Asset score
- Literacy

Community norms & opportunity structures: 9 (25%)
- Perception of condom use among peers
- Proportion idle youth
- Women's participation in workforce
- Sexual experience prevalence
- Median age at marriage
- Fertility level
- Prevalence of multiple partnering
- HIV prevalence
- Presence of regulations, laws or policies

Collective efficacy: 2 (6%)
- Social control
- Social cohesion

Crime or violence: 3 (8%)
- Report of seeing violence
- Prevalence of violence experience

Service availability: 2 (6%)
- Presence of family planning or abortion clinics

Gender variables: 12 (33%)
- Spousal age difference
- Male to female primary education ratio
- Male to female secondary education ratio
- Control of earnings
- Female/male approval of f amily planning
- Fertility level
- IPV

Analytical techniques

- Half of the studies specifically employ multilevel modeling techniques to account for the individual and community level data, and the clustering of participants by these same higher level units.
- Models used included random intercept multilevel models,[3,5,36] random effects model,[32] multilevel model with poisson distribution[15] and multilevel linear or logistic regression,[16-23,25,27-29,33,35] GEE[13] and structural equations models.[14]
- Some of those that didn't use a multilevel model had insufficient numbers for each neighborhood cluster to power the analysis.

Neighborhood and community effects

- 54% of the analyses found a significant direct effect of a neighborhood construct on a sexual or reproductive health outcome.
- Structural disadvantage/social disorganization (63%), socioeconomic status/economic disadvantage (65%), and service availability (75%) were the most commonly reported significant associations.

# of analyses with **significant** associations / **total #** of analyses	Contraceptive/condom use or knowledge or intentions	Sexual risk behavior and age at first sex	Risk of STIs	Unintended, unwanted, or non-marital pregnancy or births	Preferred family size	Intimate partner violence	**significant** analyses / **total #** analyses (%)
Structural disadvantage/ social disorganization	1/2	2/4	2/2	1/2		1/1	7/11 (63%)
Demographic composition	3/7	4/5		1/2			8/14 (57%)
Socioeconomic status/ economic disadvantage	6/11	8/10	1/2	3/5		2/3	20/31 (65%)
Community norms & opportunity structures	2/7	0/4		3/3			5/14 (36%)
Collective efficacy		1/2	0/1				1/3 (33%)
Crime or violence	0/2			0/1		0/1	0/4 (0%)
Service availability	2/2	0/1			1/1		3/4 (75%)
Gender variables	1/4	2/2		2/3		1/3	6/12 (50%)
significant analyses / **total #** analyses (%)	15/35 (43%)	17/28 (61%)	3/5 (60%)	10/16 (63%)	1/1 (100%)	4/8 (50%)	50/93 (54%)

Discussion

General methodological limitations

- Lack of consistency of neighborhood level measures, composites and indices
- Ambiguous theoretical rationale for individual measures versus constructs
- Measure selection driven by data availability
- Internal and or external consistency
- Temporality of exposure to neighborhood conditions and outcome measures
- Residence and time of exposure often unclear

Associations between neighborhood level conditions and individual sexual and reproductive health outcomes remain inconclusive due to lack of appropriate data and methodological technique. Further research designed to collect multilevel data should examine the complex interactions of neighborhood contextual factors and individual sexual behavior. Such multilevel analyses will improve our understanding of unintended pregnancy, IPV, and sexual health and inform new, innovative multilevel interventions

See handout for references.