Utilizing Partnerships to Identify Community Needs and Analyze Network Collaboration in Public Health

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Objective: LinkedUp is a multi-sector partnership focused on linking older teens (ages 17-19) to sexual and reproductive health (SRH) services at school-based health centers (SBHCs) in Mississippi. The purpose of this study was to examine key partnerships in LinkedUp development, focusing on community needs that initiated the formation of the partnership, and patterns of collaboration among these partners. **Methods:** In 2018, researchers conducted interviews (N = 3) and focus groups (N = 9) with Mississippi school administrators and high school and college students. In 2019, evaluators examined collaboration between these community partners (N = 6) using an interorganizational network analysis survey. **Results:** Thematic analyses of qualitative data indicated a need to commit to linking older teens to SRH services by increasing communication/planning among community stakeholders. Network analysis scores included an average network density of 1, strength of tie of 3.04, and degree centrality of 4.6 (SD = 1.4) for partners. **Conclusions:** Our findings illustrate how community stakeholders inform the development of a public health program as critical partners during both needs assessment and program development phases. This information can be used by practitioners and policymakers interested in addressing complex, community-level health issues.

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Community partnerships have been used for many years to address complex health issues. These partnerships can include individuals, nonprofits, school-based organizations, and other diverse partners, that collect and align their strengths and knowledge to achieve specific community health goals.[1] These health goals are often difficult to achieve without partnerships because of their. One such goal, for example, is addressing the health and well-being of vulnerable youth in a community, an issue driven by a systemic influences at the individual and ecological level.[2] Evidence indicates multi-sector partnerships are able to work well in this space through an increased efficiency of services and health outcomes for target populations.[3]

Partners play different roles in these multi-sector partnership networks. In the realm of youth health, for example, school-based health centers (SBHCs), or health centers located on grade school campuses can be valuable public health program implementers.[4] SBHCs improve educational and health-re-

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lated outcomes in students, including students of color and from low-income communities. Given that these centers can deliver a full-range of health services to many types of students, they are also useful in elucidating specific needs of the youth to program developers.[5] Practitioners and policymakers alike can benefit from better understanding how partners such as SBHCs support youth health network development through the identification of student needs and offering levers for systemic change through partnerships. This paper presents findings on the development of a multi-sector youth health network that connects older teens (ages 18-19) in Mississippi to SBHC sexual and reproductive health (SRH) services.

The LinkedUp Program

Mississippi has one of the highest teen birth rates in the United States (US), particularly among students of color and those from low-income communities.[6] The national average of teen birth rates was approximately 18.8 per 1000 girls/women between the ages of 15-17 in 2017.[7] In Mississippi, the average teen birth rate between ages 15-19 in the same year was nearly double at 31.0 per 1000 girls/women. In the state, older teenagers (ie, ages 18-19) accounted for 73.7%, or nearly 3 in 4, of all of these births.[6,8]

To address this disparity, LinkedUp, a multi-sector community network initiative, was established by non-profit organization Teen Health Mississippi in 2018. The LinkedUp program was established in part by a federal grant from the US Department of Health and Human Services, and is now maintained by other federal and local grant funds.[8] The LinkedUp program was developed to link older teens (ages 18-19 years old) to youth-friendly SRH services and focuses on teen pregnancy prevention (TPP) activities which support teens as they transition from high school to college and/or navigate the healthcare system.[8] These services are designed for young people regardless of gender or SRH need.

LinkedUp program staff work with staff from SBHCs at high schools across Mississippi to support them in making successful SRH referrals for older teens who are about to transition to college and/or the adult healthcare system. The goal of the program is to help provide this population of older teens with uninterrupted access to necessary SRH services through direct referral to youth-friendly healthcare centers and providers that provide a full range of contraceptive methods with limited restriction. In addition to working with SBHCs staff in their school/campus locations, LinkedUp works with organizations in the healthcare and nonprofit sectors. To develop LinkedUp, it was important to build an understanding on the needs of potential program participants as well as whether the multi-sector organizations involved could work together towards their common goal as new partners.

Purpose

We examined the LinkedUp program from the lens of population needs and community collaboration to address these needs. This paper describes these findings on LinkedUp using data from (1) a qualitative needs assessment and (2) an interorganizational network (ION) analysis. The purpose of the qualitative needs assessment was to understand and address needs with key stakeholders and the target population of older teens in Mississippi to inform LinkedUp program development. The purpose of the ION analysis was to build upon program development processes by examining the nature of organizational relationships in LinkedUp in the current state and how the organizations work towards achieving LinkedUp goals collaboratively.

METHODS

Data collected for the qualitative needs assessment were gathered from key informant interviews (KIIs) (N = 3) and focus groups (N = 9) stakeholders conducted between March and May 2018 with high school administrators and high school and college students. These data were collected to understand needs within the program's intended target population.[9,10] KII and focus group participants were selected for qualitative data collection due to their close familiarity with local school health center services, work with and in SBHCs, and perceptions and utilization patterns of school health center services. Because of these experiences, these individuals could provide valuable perspectives on increasing older teen pregnancy prevention service in SBHCs utilization.[11]

The second type of data collected was gathered in an ION survey implemented with LinkedUp organizational partners (N = 7) in November

2018. This survey examined relationships between members of LinkedUp, allowing a closer study of these relationships and any efforts to improve programmatic capacity.[12] Gathering ION information at this early point in program development allows evaluators to assess changes in collaboration between baseline and future data collection, capturing potential evolution over time.[13] Findings described in this analysis provide a cross-sectional, initial examination of the LinkedUp partnership and provide preliminary results on collaborative activities. Prior to the initiation of these activities, evaluators did not have existing relationships with organizational partners.

Data Collection

Evaluators conducted 3 KIIs with college administrators and healthcare professionals and 9 focus groups. Three focus groups were conducted with high school administrators and healthcare providers, and 6 focus groups were conducted with students in 2 high schools and one community college. All students in the student groups were ages 17 and older and had visited an SBHC at least once. Seventeen-year-old focus group participants had parent permission to participate. KII and focus group questions were open-ended and designed to gather school stakeholder and teens' perceptions of SRH access for older teens and comments about a program to connect older teens to SRH services in SBHCs. Each KII lasted between 30 and 60 minutes and focus groups ranged from 55 to 90 minutes. Evaluator-trained notetakers attended all sessions and major themes were extracted from the notes.[14]

Secondly, the ION survey, developed based on previous community health network analysis literature,[15,16] probed organizational members of LinkedUp on dimensions related to collaboration including (1) sharing information, (2) jointly planning, coordinating, or conducting activities, trainings, or events, (3) sharing tangible resources; and (4) sharing a formal memorandum of agreement (MOA) between members. Organizational representatives included key staff that work with the target population or directly engage in youth program planning. In the survey, LinkedUp members self-reported on collaboration activities so evaluators applied the assumption of reciprocity to interactions.[17] This means that it is assumed that organizations who reported on one or all of the collaboration dimensions did so in a mutual manner.[16]

Data Analysis

We used the constant-comparative method to analyze data from the qualitative needs assessment. The constant-comparative data analysis strategy involves taking one data item (ie, one KII or focus group statement) and comparing it with all others in that category – similar or different statements – to develop conceptualizations of the possible relationships between various pieces of data.[18] To conduct this procedure, evaluators used open coding to identify initial concepts from the KII and focus group field notes. From the initial concepts, statements were compared across members of the same population (ie, teen statements were compared to other teens, school staff to other staff, etc) to develop major themes. Team members who conducted interviews reviewed the analysis to validate accuracy and correctness.

For the ION survey data, the 4 collaboration domains were analyzed in one of 2 ways. For the sharing information and jointly planning network domains, matrices were created by frequency of interactions (ie, Never, Once or twice, Every few months, Monthly/almost monthly, Weekly/almost weekly, Daily/almost daily). This means whichever frequency statement was selected would receive a numerical rank that increased with increased frequency of interaction (ie, Never = 0, Daily/almost daily= 5).[16] Domains of sharing tangible resources and a formal MOA, on the other hand, were reported as "1 for yes" or "0 for no." We used UCINET© network analysis software to analyze all matrix network data.[19]

Three types of scores were calculated on the data – density, strength of tie, and degree centrality.

- Density indicates the extent of communication and cooperation between organizations in a network. To measure this in LinkedUp, the matrix data for each of the 4 collaboration domains were consolidated into one overall collaboration matrix. Each number was replaced with a 1 indicating some sort of link between the organizations. Where there was no type of relationship the score was a 0, indicating no relationship. This matrix was

Table 1
ION Survey Measures for LinkedUp

Network Measure	Measure Range	Measure Meaning	Analysis Technique
Density	0-1	Calculated for the overall network, a 1 indicates that every organization in LinkedUp has some sort of relationship with every other organization.	Analyze binary, consolidated matrix (score range: 0-1) for density. One average density score produced for whole network.
Strength of Tie	1-4	Calculated for the overall network, a 4 indicates that all LinkedUp organizations have the strongest relationship with one another. In this analysis, this would equate to all organizations having formal MOA's with each other.	Analyze ordered, consolidated matrix (score range: 1-4). One average strength of tie score produced for whole network.
Degree Centrality	0-6	Calculated for each individual organization, a 6 indicates that the organization has a connection to every other organization in LinkedUp.	Analyze binary, consolidated matrix (score range: 0-1) for degree centrality by individual organization. Scores produced for each organization in network.

analyzed in UCINET© for overall density. The value calculated would provide overall density of the network, with a network density value of 1 indicating that each organization is connected to all other organizations in some capacity.[15,16]

- Strength of tie scores describes the intensity of the relationships, with a higher score indicating a stronger relationship. To calculate the average strength of tie for the network, the 4 relationship domains were once again consolidated. Instead of binary values, the matrix for the analysis of the 4 collaboration domains contained the interaction scores ranging from 1 to 4.[15,16]
- Degree centrality helps quantify and provides position data for the organizations in the network. Organizations with high degree centrality scores are well connected and can often be the organization that other organizations solicit for information.[20] To calculate degree centrality, the binary consolidated matrix used to calculate density was analyzed in UCINET© to calculate degree centrality for each organization in LinkedUp.[15,16]

Table 1 provides details on the network measures and analysis procedures utilized for this ION analysis.

RESULTS

Results from the qualitative needs assessment (KIIs and focus groups) informed the development of LinkedUp and led to the ION analysis examining collaboration between LinkedUp members. Data from all sources are summarized below. KII and focus group data are reported separately as the respondents were representative of stakeholders from different levels of the social ecology for the target population. KII respondents provided insight primarily from the college-level, and focus group respondents spoke from the perspective of peer-level high school and early college students, as well as high school administrators and staff.

Key Informant Interviews

The major themes from the KIIs with college administrators and healthcare providers included (1) inconsistent access to reproductive health services upon graduation; (2) lack of planning for continued contraceptive use; and (3) need for improvement in administrative commitment to improved access to SRH services. Illustrative quotes for each major theme are listed below. Interviewees described how access to SRH services for youth as they graduate from high school is inconsistent and not comprehensive. One participant from a community college remarked:

"One concern is retention of students [in SRHS] who go [on] to larger campuses."

Administrators and staff were not certain that the SRHS available to students after graduation would be used. Whereas these resources were available in the community, the accessibility and ease of use were not a guarantee, given that these places were not necessarily frequented by the target population.

"Community health centers and the Mississippi State Department of Health are there and there are some on-campus services... but [there's] no assurance [that students will use these resources]."

According to interviewees, it was believed that few high school students had a plan for consistent and effective contraceptive use and SRHS after graduation, due to existing perceptions and lack of knowledge. Interviewees, with their experience working with students, provided reasons as to why SRH services were not always obtained, citing societal perceptions and individual knowledge as drivers in this phenomenon.

"Students have [a] personal embarrassment with accessing contraceptives."

"[They] don't believe they need it (SRHS)."

"Students are not knowledgeable about family planning in general."

Key Informants suggested immediate and long-term improvements in approach and transition/referral strategies that could be implemented for students. In particular, they suggested there be a way to connect older teens directly to SRHS after graduation, as well as identify what the SRHS would be available at SBHCs, or other areas in the community.

"[We] need a standard protocol to connect students to SRHS post-graduation."

"[There is a need for] follow up to assure connectivity to services…wherever they exist."

Focus Groups

The major themes emerging from analysis of focus group data aligned with KIIs respondents and included (1) disruption in SRH services upon high school graduation; (2) challenges to access and lack of planning to continue using contraceptives; and (3) successfully accessing reproductive health services. Illustrative quotes follow. Focus group participants described how local high school students experience a disruption in healthcare and reproductive health services following graduation, leading to unplanned outcomes, such as pregnancy. Both school staff and students noted there was an evident trend in lack of SRH use after graduation, citing issues with continuation of services and utilization of contraception after high school.

"[Using] reproductive healthcare…goes down after graduation."

"After [leaving] high school, in one or two years, they [will] have a baby."

Participants also described how students had an understanding of current SRH services but little/no knowledge of post-graduation service availability. Primary concerns for students were confidentiality, cost, and process to access.

"[There's] no communication with incoming students at community college about healthcare, where to obtain [it], or what services [are offered]."

"I don't know how I feel about taking that step [to] call for an appointment. What about cost?"

Participants noted that there was a need for continued healthcare and SRH services after high school, citing access and lack of a support system as major reasons.

"It's a big issue...most people get pregnant and drop out of college and if you're not still in school you are dropped from Medicaid."

"Our school counselor is barely there [and] confidentially is an issue."

"Some campuses don't have a clinic."
"We need to use an older mentor and teen peers [to talk about SRHS]."

Results from the KIIs and the focus groups led to program developers to convene a network of local organizations to help link older teens leaving high school to SRHs. The community network strategy addressed stakeholders' concerns with a lack of support system and link to SRH services after high school for older teens, and the need for commitment from administrators to support teens who needed to access reproductive health and contraception services. The network of collaborators, now known as LinkedUp, included organizational participants from the KIIs and other community organizations including SBHCs and SRH-focused nonprofits. The membership of those involved in the needs assessment was critical, as these soon-to-be partners brought knowledge on the SRH needs of the youth and the best ways to address these. The ION results describes how LinkedUp organizations collaborated with one another once forming a partnership.

Interorganizational Network Analysis (ION) Survey

All LinkedUp organizations responded to the ION survey (N = 7). Organizations included nonprofit, healthcare, and education organizations in the community that worked with older teens or programs for older teens. Based on the survey responses, the calculated overall density of the LinkedUp network was 1. This score translates to a 1:1 proportion of potential connections in the network to the number of actual connections, indicating that every organization is connected to every other organization in the LinkedUp network in some capacity.[21] The average strength of tie for this network was 3.04 on a scale of 1 to 4. This score connotes that, overall, the organizational connections were currently relatively close or intense in terms of the level of collaboration between partners.[22] Finally, degree centrality describes more about the network at the organizational-level. Scores for degree centrality ranged from 3 to 6. The median score was 4 and the standard deviation was 1.4. The exact scores and breakdown were as follows: 3 (N = 2), 4 (N = 2), and 6 (N = 3). These scores indicate that all organizations are well-connected, and there may be increased collaboration among the 3 organizations that have a degree centrality score of 6.[20]

DISCUSSION

In this study, we examined how community partners can play a role at different stages in public health program development. Community stakeholders in the qualitative needs assessment described a need to address SRH needs among older teens by building school-based commitment to increase awareness about these health needs. Additionally, they expressed that a community-driven solution should work to reduce environmental challenges related to connecting older teens to SRH after high school. Based on these results, it was important for these stakeholders that the community could come together to address this health need. in a network of community collaborators, including SBHCs as a critical connection for older teens, that would be able to share information and resources, jointly plan, and potentially have formal MOAs so that the needs of the target population are understood and addressed by organizations in various levels of the social ecology.[23]These results, which were analyzed by program developers in early summer 2018, informed the development of LinkedUp in fall 2018.

A community network strategy to address SRH needs of older teens was sought out given the root issues identified by stakeholders in the interviews and focus groups centered around needing support from key individuals and organizations such as SBHCs. This support, through mentorship, education, and service provision, would be instrumental in addressing older teens' inconsistencies and disruptions in healthcare access after high school. In addition, given the involvement of local colleges and high schools in the qualitative needs assessment, the program could be tailored for the target population and provide necessary organizational linkage to ensure older teens could receive knowledge about available SRH services, and receive informal referrals and educational resources through the network. As these participants regularly interface with the target population, the strategy would be a helpful mechanism to address the issue of SRH and general healthcare service continuation by building upon an already existing pathway for students in the area.

Given the new formation of the network, which included some representatives from the KIIs and focus groups, as well as other partners identified by program developers, evaluators sought to examine the state of collaboration among LinkedUp members to understand relationships at program initiation. ION results indicated a foundational level of collaboration among members, with the overall collaboration being well-connected with strong relationships. Additionally, most organizations were independently linked to most other organizations, and no particular organization(s) were in main control of the partnership at this timepoint. These results describe a strong foundation for the network as it grows and evolves with program development.[24] The network at the stage demonstrates that members generally collaborate and work with one another in a distributive fashion, rather than in a hierarchical way, which is indicative of whole-of- network collaboration. In addition, the data reinforced the idea that these multi-sector partnerships could work in the realm of youth health towards a common health goal. These results are promising given the diversity of the partners in the network and the newly-formed nature of the collaborative.

Existing SRH and TPP programs often focus on behavior change at the individual level, typically within a single setting with limited coordination among youth-serving systems in the community.[25] Although in the current research we did not evaluate effectiveness of the multi-level collaborative approach in SRH/TPP program development, findings suggest the need, and the views of organizations supporting, these strategies. Future research can build upon understanding the effectiveness of this program, as evidence indicates it could be a promising strategy to address SRH gaps and teen pregnancy disparities.[25] In addition, this strategy holds promise that the program may be a way to connect older teens to other types of needed healthcare general available at SBHCs, including general health screenings and education, mental healthcare and counseling, general first aid, and immunizations and vaccines. [8] As the program progresses, LinkedUp will continue its collaborative approach, from both a needs assessment and interorganizational partnership standpoint, to meet the health needs of Mississippi high school students who transition out of school care.

Limitations

It is important to reinforce that these findings are from an early phase of program development; implications are limited to a better understanding of program development rather than effectiveness. Additionally, whereas a variety of stakeholders were included in the needs assessment of this study, it will be important to involve these stakeholders continuously, both within and without LinkedUp, to provide feedback as the program matures. Finally, ION results are self-reported so there is potential bias in the measures although, given resources and feasibility, this was an appropriate, evidence-informed strategy to measure collaboration.

Conclusion

Given the high rates of unplanned pregnancy among 18-19-year-old teens and the current lack of TPP programs for this population, LinkedUp helps to fill a gap in deterring unintended older teen pregnancies in Mississippi. This type of program ostensibly can be expanded into other schools and areas of the state as it was formed as a result of an expressed community need of such a program and service, and collaboration among partners is promising. In addition, as program developers continue to learn about the health needs of older teens in the community, this program can be useful to link this population to other general health needs. Future research will gauge how population needs may shift overtime, as well as any evolutions in collaboration patterns among the LinkedUp network.

IMPLICATIONS FOR HEALTH BEHAVIOR OR POLICY

Our findings contribute to addressing multiple priority health objectives identified by the US government's Healthy People initiative. Healthy People provides evidence-based, national objectives for improving the health of Americans by empowering individuals to make informed health decisions and encouraging collaborations across communities and sectors, as demonstrated in the present study.[26] Our study addresses Healthy People objectives to improve access to healthcare services; the healthy development, health, safety, and well-being of adolescents and young adults; and pregnancy planning and spacing, in addition to preventing unintended pregnancy.[27]

Practitioners can utilize the information in efforts that work towards the 3 aforementioned Healthy People objectives related to healthcare access, teen health, and pregnancy planning. Specifically, practitioners should:

- Focus on sustaining SRH and other health services for older teens, particularly those that face healthcare access issues, to ensure a better pathway to improved health outcomes for youth.
- Strategically identify key community partners that can inform a program's development throughout early stages of needs assessment and program formation.
- Leverage partners that can play a critical role in reaching the target population, such as those that are already positioned to be conduits in knowledge sharing and interfacing with target population (eg, SBHCs).

From a general perspective, our findings also provide information to those interested in addressing a health issue in their communities. In both data collection efforts, we find that research-practice partnerships, formed through community stakeholders and later program implementers, are critical to build the foundation of a promising strategy to address needs of the target population. Practitioners and policymakers should continue to be encouraged to utilize partnerships, particularly in issues that have been difficult to address using traditional strategies. Engaging in these partnerships allows for a whole-system approach to public health that can be more desirable from a health outcomes and return-on-investment perspective for communities throughout the nation.

Human Subjects Approval Statement

The Texas A&M University Institutional Review Board (2016-0281D) and the University of Mississippi Medical Center Institutional Review Board approved the research protocol for this study. Informed consent was obtained from all participants in the both the qualitative assessment and interorganizational network analysis.

Conflict of Interest Disclosure Statement

The authors have no conflicts of interest to declare.

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APPENDIX

LinkedUp Exploratory Interview Script (Partial):

College Administrators and Healthcare Providers

Where do students in the school come from?

1. What currently happens with reproductive health care for first-year students as they transition to your school?
2. Do you know if there are any referral protocols?
3. What resources exist for continued reproductive health?
4. What facilitates continued reproductive health care for your students as they transition to your school?
5. What challenges exist to reproductive healthcare for your students as they transition toyour school?

Focus Group Script (Partial):

High School and College Students:

1. Where do majority of the students from your school go after graduating?
2. What kind of services are offered at your school based health center regarding their sexual and reproductive health care service?
3. What currently happens with reproductive health care for seniors when they graduate?
4. Do you know if there are any referral protocols?
5. What resources exist for continued reproductive health?
6. How are you connected with care to address your sexual and reproductive healthcare after graduation?
7. What challenges exist to reproductive healthcare for students in your school and seniors when they graduate?

High School Administrators and Healthcare Providers:

1. Where do students from the school transition after graduating?
2. What currently happens with reproductive health care for seniors when they graduate?
3. Do you know if there are any referral protocols?
4. What resources exist for continued reproductive health?
    a. Community health centers
    b. Health departments
    c. Other
5. What facilitates continued reproductive healthcare for seniors when they graduate?
6. What challenges exist to reproductive healthcare for students in your school and seniors when they graduate?
7. Is there anything else I need to know?

Interorganizational Network Survey (Partial):

Q7 SHARING INFORMATION

Sharing information refers to receiving or providing data, updates on related programs or services, educational materials, newsletters and/or other types of information related specifically to contraception for older teens in Mississippi.

How often in the LAST 12 MONTHS did your organization EXCHANGE or SHARE INFORMATION with the following organizations regarding unintended teen pregnancy among students graduating from high school in Mississippi?

	Once or twice (1)	Every few months (2)	Monthly/ almost monthly (3)	Weekly/ almost weekly (4)	Daily/ almost daily (5)	Never (0)	This is my organization (6)
Organization A	○	○	○	○	○	○	○
Organization B	○	○	○	○	○	○	○
Organization C	○	○	○	○	○	○	○
Organization D	○	○	○	○	○	○	○
Organization E	○	○	○	○	○	○	○
Organization F	○	○	○	○	○	○	○
Organization G	○	○	○	○	○	○	○

Q9 JOINTLY PLANNING, COORDINATING OR CONDUCTING ACTIVITIES, TRAINING OR EVENTS

Jointly planning, coordinating or conducting an activity, training, event or program refers to things like fundraising, proposal development, planning a health education workshop, developing a program to reach at-risk groups within the community, or co-sponsoring a community meeting or health fair.

In the LAST 12 MONTHS, how often did your organization JOINTLY PLAN, COORDINATE, OR IMPLEMENT AN ACTIVITY, TRAINING, EVENT, or PROGRAM with the following organizations regarding unintended teen pregnancy among students graduating from high school in Mississippi?

	Once or twice (1)	Every few months (2)	Monthly/ almost monthly (3)	Weekly/ almost weekly (4)	Daily/ almost daily (5)	Never (0)	This is my organization (6)
Organization A	○	○	○	○	○	○	○
Organization B	○	○	○	○	○	○	○
Organization C	○	○	○	○	○	○	○
Organization D	○	○	○	○	○	○	○
Organization E	○	○	○	○	○	○	○
Organization F	○	○	○	○	○	○	○
Organization G	○	○	○	○	○	○	○

Q11 SHARING TANGIBLE RESOURCES

Sharing tangible resources refers to sharing or exchanging resources such as staff, space, equipment, or funds. This may or may not involve formal working arrangements between organizations, like contracts, subcontracts, resolutions or memorandum of agreement.

In the LAST 12 MONTHS, did your organization SHARE OR EXCHANGE TANGIBLE RESOURCES with the following organizations regarding unintended teen pregnancy among students graduating from high school in Mississippi?

	Yes (1)	No (2)	This is my organization (3)
Organization A	○	○	○
Organization B	○	○	○
Organization C	○	○	○
Organization D	○	○	○
Organization E	○	○	○
Organization F	○	○	○
Organization G	○	○	○

Q13 Did your organization have a formal memorandum of agreement or contract with the following organizations regarding the shared resource?

	Yes (1)	No (2)	This is my organization (3)
Organization A	○	○	○
Organization B	○	○	○
Organization C	○	○	○
Organization D	○	○	○
Organization E	○	○	○
Organization F	○	○	○
Organization G	○	○	○

Q14 Due to LinkedUp, have you begun any new projects with the following organizations?

	Yes (1)	No (2)	This is my organization (3)
Organization A	○	○	○
Organization B	○	○	○
Organization C	○	○	○
Organization D	○	○	○
Organization E	○	○	○
Organization F	○	○	○
Organization G	○	○	○

Interested parties can contact the corresponding author for the full interview, focus group, and/or survey instruments.