A Novel Approach to Geographically Mapping Effective Family-Based Services: Feasibility and Quality Comparison with 2-1-1

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ABSTRACT

Community social services are often fragmented and difficult to navigate. This presents a barrier to programs, such as health navigation, that focus on connecting individuals to available services. Existing service mapping efforts, such as those generated by 2-1-1, are helpful but limited in the specificity they provide, particularly with regard to whether services are based on evidence-informed principles. This may lead to a distrust of service quality or poor referral match. We developed a novel service mapping protocol to identify local, evidence-informed, family-based services, and compared results to 2-1-1's resource list. Our mapping protocol identified more evidence-informed services than 2-1-1 and collected greater detail related to accessibility. Recommendations for integrating this approach into routine community mapping efforts (e.g., 2-1-1) or as a stand-alone approach are discussed.

KEYWORDS: Service Mapping; Health Navigation; Evidence-Based Practices; Behavioral Health; Family-Based

Introduction

Community health service systems are often fragmented into distinct locations with varying eligibility criteria,[1,2] causing major inconveniences for service users. Financial and transportation barriers,[2,3] distrust of public services,[1] and confusion about what services are available[2,4] act as additional barriers to service access. This is particularly salient for family-based prevention services that are typically offered in a community-based setting, namely programs which focus on building family capacity to prevent the development of substance use, delinquency, and aggressive behaviors in children.[5]

Increasingly, health systems are addressing system-level fragmentation by employing individuals to assist clients in identifying and accessing needed services. These individuals are typically referred to as health navigators, care coordinators, or community health workers,[4,6,7] hereafter referred to as "health navigators." Health navigators partner with communities and agencies to identify local services and assist clients in overcoming barriers to these services, such as accessibility, transportation, language, and cultural barriers.[8] However, even among professional health navigators, understanding complex service systems can be a challenge.[3] Health navigators refer clients to services based on a wide variety of factors, including location, client needs, and the evidence-base underpinning available services.[9] Meanwhile, the availability of health care services is constantly changing.[6] A systematic review of mental health system linkages suggests that effective navigation requires continuous and direct collaboration and communication with the receiving agencies.[10] As the popularity of healthcare navigation continues to grow[11] the need for systematic methods to identify effective services increases simultaneously.

Service Mapping

Service mapping, otherwise known as "community mapping," is a common method of documenting the scale and scope of resources existing within a particular community or geographic area, often using visual or spatial media to present findings.[12] This process commonly follows a participatory approach, in which community stakeholders come together to identify and/or classify a list of existing services based on personal knowledge of the community of interest.[13] Other approaches to mapping community services include searching the Internet, libraries, phonebooks, and directories. Stakeholders may gather additional information via surveys to service providers.[14-15] Findings are ultimately compiled into user-friendly guides.[16]

The largest scale service mapping effort in the United States is 2-1-1, a resource list managed at the state level that includes a variety of social services.[17] State-level 2-1-1 databases are populated by directly asking organizations to provide information regarding their program offerings.[18] 2-1-1 is a popular resource due to its accessibility,[19] however, its approach lacks the specificity many health navigators need to tailor referrals to the particular needs of clients.[17] This includes a disclaimer by 2-1-1 that being listed in the directory does not imply that services meet specific standards beyond either licensing or "implied standards of its field of service."[18] Consequently, there is a need to identify additional or alternative community service mapping strategies in order to provide health navigators and other service linkage programs information on whether services are evidence-informed and likely to appropriately address client needs.

Current Study

In this paper we compare a novel approach, the Evidence Service Mapping Protocol (ESMP) to information available through 2-1-1. This study was conducted as part of a larger

research project examining the feasibility of a family and youth navigator model intended to prevent parent-child adolescent conflict and adolescent substance misuse.[20] Our site collaborators on this project and ultimate end users of the resulting service maps include local community-based, youth-focused social service non-profits in King, Snohomish, Kitsap, and Okanogan Counties in Washington State.

Given the known advantages and limitations of traditional approaches to populating services directories, we propose the following hypotheses: in comparison to 2-1-1, the ESMP will (1) identify a greater number of available services overall; (2) identify more evidence-informed, age-appropriate, and currently accessible family-based services; and (3) provide more detail relevant to accessibility.

Methods

We independently conducted the two service mapping approaches (2-1-1 and the ESMP) between April and August 2019 within the four partnering counties in Washington State. Counties were selected due to their participation the larger discussed research study.[21] The methods used in both 2-1-1 and the ESMP searches are summarized below.

Agency Identification through 2-1-1

Searches were conducted within Washington State's 2-1-1 database for each of the four selected counties. We searched the database for family-based behavioral health services, using the search filter term "family therapy," and limiting the catchment area to a single county for each search. All results were added to our list of 2-1-1-identified agencies.

Evidence Service Mapping Protocol (ESMP)

The ESMP includes four steps: (1) researching eligible programs, (2) building a list of agencies, (3) directly contacting agencies, and (4) identifying additional program offerings via snowball sampling. Each of the four phases is outlined below.

Phase One: Researching Eligible Programs

Identification of high-quality family services began with a review of the literature in June 2018 to identify effective family-based programs for adolescents. The review identified 12 evidence-based programs;[21] two additional programs were added following consultation with experts on local family programming. We verified this list against two prominent evidence-based inventories: Blueprints for Violence Prevention[22] and the Washington State Inventory of Evidence-Based, Research-Based and Promising Practice.[23]

The review also identified essential elements of evidence-based family services common across all practices addressing family conflict with adolescents: positive adult-child communication and spending positive time with youth.[21] During the subsequent phases, any additional family-based services that utilized these two elements were added to the eligible service list as part of our "snowballing" technique (see *Phase Four*). With these additions, our resulting map was not limited to branded evidence-based programming included in published inventories.

Phase Two: Building an Agency List

We generated a comprehensive list of agencies that offered any of the 14 evidence-based family services identified in *Phase One*. This list was curated from two main sources: (1) training, certification, and credentialing entities; and (2) government-funded organizations. During meetings with our site collaborators for a larger research project, we solicited their knowledge of these possible contacts. We first contacted training entities that provide training

and authorization to use an evidence-based service and asked for a list of their clients within the four counties. This included FFT LLC for Functional Family Therapy,[24] MST Services for Multisystemic Therapy,[25] and the Washington State University Extension for the Strengthening Families Program.[26]

We also contacted state and county governments to request a list of third-party stakeholders receiving funding support for any of the known evidence-based family-based services. These stakeholders were asked to identify specific agency locations where they had implemented evidence-based services for which they received funding. One county was also able to provide medical claims data indicating which agencies billed Medicaid for the 14 identified evidence-based practices. This information was also used to build the list of agency contacts.

Phase Three: Directly Contacting Agencies

After creating a comprehensive list of agencies, we screened each agency to verify if the evidence/family-based program(s) of interest were currently offered. We then phoned each agency to confirm service availability and request additional information. The interview included questions about program eligibility, availability, and cost of various services. See Figure 1 for the number of agencies contacted and excluded at each stage. Attempts to contact an agency were made a minimum of three times before the agency was excluded from the list for non-responsiveness.

Phase Four: Snowball Sampling

At the end of each call with an agency, we employed a snowball sampling approach by asking if any other family services were offered within their own agency, or if the contact knew of any other agencies offering related programming. If the agency contact mentioned an additional known eligible service, the *Phase Three* inquiry process was repeated to collect

relevant information. If the service was not on our list of pre-vetted offerings, eligibility for inclusion was decided based on whether the agency self-reported containing the essential evidence-based elements identified in Figure 1.

Prevention-Oriented and Intervention-Oriented Classification

To tailor services for an appropriate level of need, our research team classified all services identified through the ESMP as either prevention-oriented or intervention-oriented services. Prevention-oriented programs consisted of parenting-skills classes, phone consultations, and/or outpatient programs typically held within the community, whereas intervention-level programs offered more intensive, longer-term, typically in-home and individualized services for those with higher behavioral health needs.

Data Analysis

To facilitate a comparison between the two approaches, we compiled all agencies identified via the two mapping approaches (2-1-1 and ESMP) into a single database. For both methods, an agency was defined as an organization with a unique physical street address.

For agencies identified by 2-1-1 that were not identified by ESMP, we reviewed our protocol notes to see if the agency was previously contacted and already excluded. Agencies were coded as excluded from the final list for one of the following reasons: (1) services offered did not meet eligibility criteria (i.e., the services did not include evidence-based essential elements or were not adolescent-focused); (2) substantive barriers to accessing services existed (i.e., a youth must be assigned a court case worker in order to receive the service); or (3) the agency never responded to our inquiry. Agencies identified by 2-1-1 that were never contacted by our team were coded as having been missed by our protocol. We also coded agencies for how

they were identified: training entity, state or county funding source, snowballing method, 2-1-1, or via multiple pathways.

All services identified through ESMP were imported into Google's MyMaps[27] feature and categorized by county, program title, and prevention-oriented/intervention-oriented classification. The interactive functionality of the digital service map enables the health navigators at our collaboration sites to select individual locations and read detailed service information, and share links directly with clients when preferred.

Results

Agencies and Services Identified

A total of 259 service agencies were identified by ESMP and 2-1-1 combined (Table 1). Only 19 (7%) service agencies were identified by both. The ESMP identified 109 unique family-based services across 77 agencies. Contrary to our first hypothesis, the 2-1-1 method identified a greater number of services overall (n=150). However, of these, roughly 40% were identified and subsequently excluded by the ESMP (n=54, 41%). Common reasons for exclusion included no longer offering a service, not offering adolescent-focused services, or not utilizing the core-elements of evidence-informed family-based services. Of the remaining services identified by 2-1-1, quality and relevance of the offerings was unknown for 77 (51%) agencies. Supporting our second hypothesis, the ESMP identified more population-relevant agencies (n=58; 75%) offering 78 unique programs that were not identified through 2-1-1.

Comparing ESMP and 2-1-1: ESMP Provides Greater Detail than 2-1-1

Information identified via the ESMP included 1) program names, 2) dates and times the program was offered, 3) cost, 4) enrollment capacity, 5) languages offered, 6) level of training and/or certification obtained by the program facilitator, and 7) direct contact information for the

program representative. By contrast, the 2-1-1 method yielded 1) agency-level contact information and 2) a general category of behavioral health vs. family-based services. Differences between the two approaches support our third hypothesis that ESMP provides greater program detail (Table 2).

Comparing ESMP and 2-1-1: ESMP Identified More Prevention-Oriented Services

A majority of the services identified by ESMP and missed by 2-1-1 were prevention-oriented programs (n=63) compared to intervention-oriented programs (n = 8) (Table 3). Prevention-oriented services represented the vast majority of services identified through the ESMP (82/109, 75.2%), and were more likely to be identified via training entities (n=33, 40.2%), while least often found through snowballing methods (n=17, 20.7%). Intervention-oriented services were more likely to be identified by their source of funding (n=13, 48.1%), and least likely to be found via a training entity (n=2, 7.4%).

Discussion

The Evidence Service Mapping Protocol (ESMP) was developed to aid health navigators in their efforts to provide tailored service referrals based on client need and preferences. This pilot of the ESMP in particular was used to support the needs of our site collaborators in a larger youth behavioral health navigation project, While this pilot was used specifically to map family behavioral health services, the ESMP has the potential to be adapted and utilized to map a variety of population-indicated service offerings in a specified geographic location. This study aimed to examine whether the ESMP outperformed the widely used 2-1-1 resource database in identifying programs that were evidence-informed and appropriate for the client population. Findings reveal significant discrepancies between the ESMP and 2-1-1 regarding the identification of family-based services. Only 7% of agencies were identified by both methods,

with the 2-1-1 method most commonly missing information regarding family-based prevention-oriented programs. This suggests that current methods of populating 2-1-1's database either 1) overlook organizations that provide prevention-oriented services, or 2) that such agencies are not reporting these programs due to their inconsistent availability.[28] For example, many prevention-oriented courses related to family-conflict take place within a community agency for an 8-12 week period, after which the courses are relocated to another community agency or paused for a period before the agency is available to host again. This fast-paced, intermittent scheduling has thus far been unaccounted for by directory efforts, such as 2-1-1, and is likely to require regular maintenance.

Additionally, the ESMP collected information crucial for tailored service navigation, including languages spoken or cost of participation that may otherwise serve as barriers to accessibility.[8] The ESMP also excluded programs that did not offer information about specific program components and for which a conclusion about program quality could not be drawn. As distrust of service quality is a common concern of clients in need of navigation services,[29] the ability to provide information regarding the use of evidence-based program elements may support a strategy to increase engagement in community services.

From initiation to building online maps, completing the ESMP process for each county took approximately 60 hours of one person's time. This is significantly more time than it takes to access 2-1-1, thus some stakeholders may be reluctant to adopt the full ESMP approach for ongoing service mapping efforts. However, specificity at this stage intends to prevent false positives for both the health navigator and the end user following through on a service referral. The ESMP also facilitates partnerships between the service mapper, partnering health navigators, and referral agencies via the direct contact required, potentially increasing the warmth of the

hand-off between the agency, health navigator, and client. While the ESMP requires more front-end initiative, a significant amount of time and frustration is subsequently saved when making effective referrals.

Limitations

The data originally obtained from Washington State 2-1-1 may be misrepresentative of their current online directory. The searches were completed in summer of 2019, after which Washington State 2-1-1's online directory underwent reorganization. The new online directory offers a wide range of specific search filters, including search terms such as the word "prevention" that may be compared to ESMP in future studies. 2-1-1 also offers a phone-based service through which clients may call a 2-1-1 staff member to request service information, which was not utilized for this project.

Conclusion

This paper presents a novel method for mapping local services for community navigation and referral systems. The ESMP was designed to address challenges in service access due to fragmentation in the continuum of mental and behavioral health systems by providing health navigators with a resource map containing a list of pre-vetted services. The services identified through ESMP and 2-1-1 were significantly different and suggest that service directory approaches may miss capturing community prevention services, in particular. Further, nearly half of the services identified by the 2-1-1 approach were excluded by ESMP on the basis of quality, relevance, or access, indicative of the ESMP's potential to avoid poorly fitting or low-quality services at the point of referral.

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Figure 1. Flowchart for Determining Service Eligibility for the Evidence Service Mapping Protocol (ESMP)

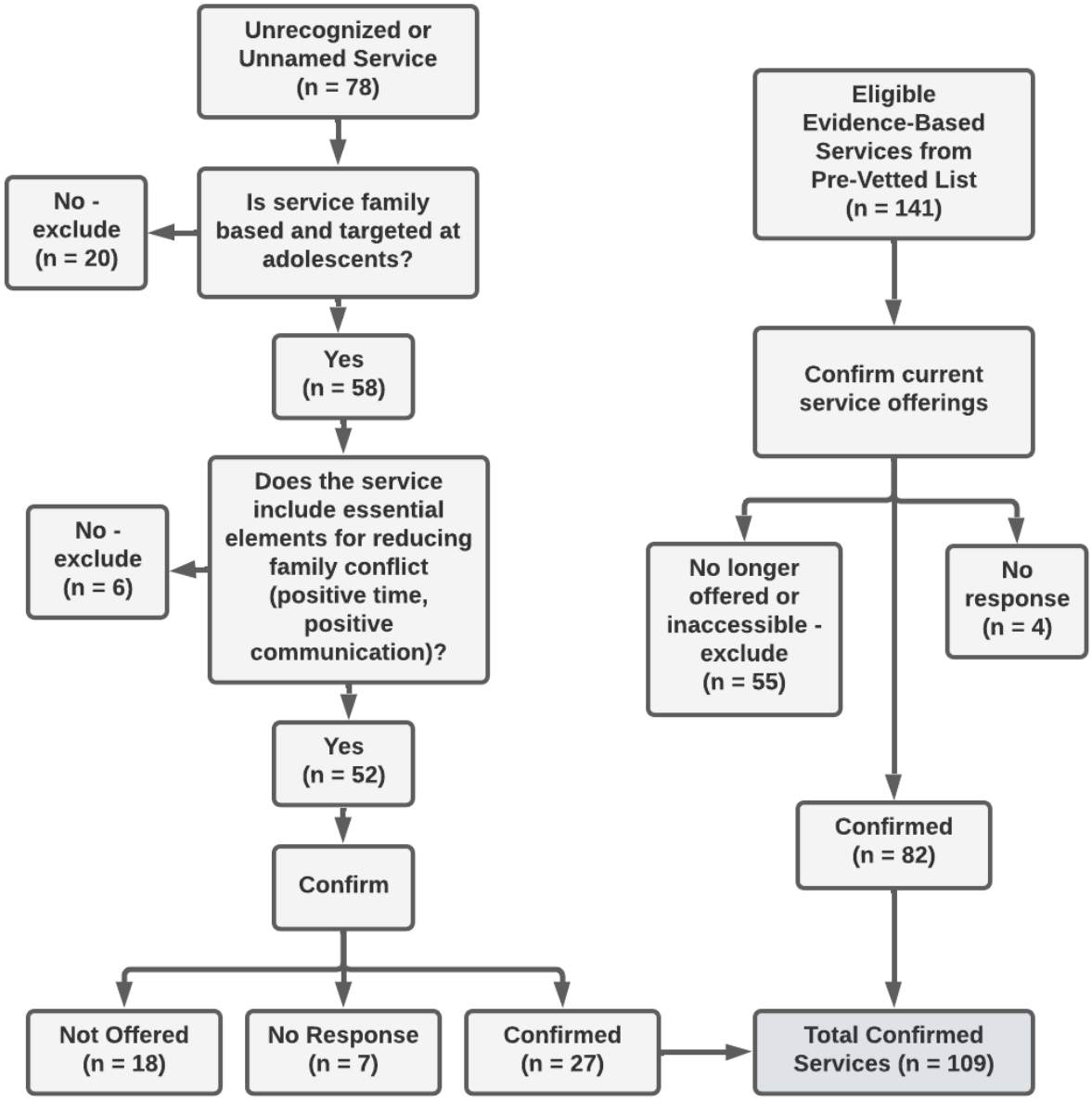

Table 1. Agencies Identified through Evidence Service Mapping Protocol (ESMP) vs. 2-1-1

Total agencies identified via ESMP	77
Total agencies identified via 2-1-1	150
Agencies identified by both methods	19
Agencies from 2-1-1 not included in service map	131
Not identified through ESMP sources*	69 (52.7%)
No relevant services**	54 (41.2%)
Agency failed to respond	7 (5.3%)
Agency had restricted access	1 (0.8%)

*ESMP identified services through funding sources, training entities, and snowballing methods. This identification occurred separately from 2-1-1's identification of agencies.

**Agencies were filtered out for irrelevancy if they did not currently offer any services that were included evidence-based common elements associated with reducing family conflict in families with adolescents (positive time, positive communication)

Table 2. Evidence Service Mapping Protocol (ESMP) vs. 2-1-1 Content

	2-1-1	ESMP
Search Filters		
County, zip code	√	√
Behavioral Health	√	√
Family-Based	√	√
Evidence-Based Elements		√
Adolescent Specific		√
Accessibility/Eligibility		√
Search Output		
Agency Name	√	√
Program Name(s)		√
Program Times		√
Agency Address	√	√
Agency Phone Number	√	√
Program Contact Number		√
Program Cost		√
Agency Website	√	√
Languages		√
Brief agency summary	√	√
Prevention vs. Intervention Classification		√
Program Capacity		√
Provider Training Credentials		√

Table 3. Comparison of Services Found via Evidence Service Mapping Protocol (ESMP) vs. 2-1-1

	Prevention-Oriented	Intervention-Oriented	Total
Total Services in ESMP	82	27	109
Found via funding source	32 (39.0%)	13 (48.1%)	45 (41.3%)
Found via training entity	33 (40.2%)	2 (7.4%)	35 (32.1%)
Found via snowballing	17 (20.7%)	12 (44.4%)	29 (26.6%)
Services on map not identified by 2-1-1	63	15	78
Found via funding source	24 (38.1%)	5 (33.3%)	29 (37.2%)
Found via training entity	26 (41.3%)	2 (13.3%)	28 (35.9%)
Found via snowballing	13 (20.1%)	8 (53.3%)	21 (26.9%)