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To cite this article: Sonia Boyum MS, MA, Matthew W. Kreuter PhD, MPH, Amy McQueen PhD, Tess Thompson MPH, M. Phil & Regina Greer (2016) Getting Help from 2-1-1: A Statewide Study of Referral Outcomes, Journal of Social Service Research, 42:3, 402-411, DOI: 10.1080/01488376.2015.1109576

To link to this article: <http://dx.doi.org/10.1080/01488376.2015.1109576>



Published online: 22 Jan 2016.



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Getting Help from 2-1-1: A Statewide Study of Referral Outcomes

Sonia Boyum, MS, MA^a, Matthew W. Kreuter, PhD, MPH^a, Amy McQueen, PhD^a, Tess Thompson, MPH, M. Phil^b, and Regina Greer^c

^aHealth Communication Research Laboratory, Washington University in St. Louis, St. Louis, MO; ^bThe Brown School of Social Work, Washington University in St. Louis, St. Louis, MO; ^cUnited Way 2-1-1 Missouri, St. Louis, MO

ABSTRACT

The 2-1-1 information and referral helpline connects economically vulnerable Americans with needed health and social services in their communities. This longitudinal study followed a random sample of 2-1-1 callers in Missouri ($n = 1,235$) to determine the results of the referrals they received. One month after calling 2-1-1, most remembered receiving (93%), tried contacting (91%), and reached (82%) at least one referral they received. Far fewer (36%) received assistance from the referral, ranging from 17% for housing assistance to 67% for food assistance. Callers receiving assistance were much more likely than those not receiving assistance to report at the one-month follow-up that their problem had been resolved ($OR = 3.0$, 95% $CI = 2.2, 4.1$), although this was less true among callers with multiple unmet basic needs. Findings explain how 2-1-1 helps callers resolve problems but also helps them identify missed opportunities in the current system. Future research could elucidate how 2-1-1 callers resolve problems; it could also find ways to improve outcomes for the most disadvantaged 2-1-1 callers.

KEYWORDS

Basic needs; information and referral; material hardship; social services

Introduction

The 2-1-1 information and referral helpline is a federally designated dialing code like 9-1-1 for emergency services or 4-1-1 for directory assistance that provides callers with referrals to local health and social service agencies. Callers to 2-1-1 speak with trained information and referral specialists that identify the caller's needs, search a database to find local resources that match their needs, and provide information to help callers contact service providers that can help.

Although 2-1-1 connects millions of economically disadvantaged Americans to needed health and social services every year (Daily, 2012), surprisingly little is known about the outcomes of those referrals. For example, what proportion of helpline users actually contact referrals, receive help, and/or have their needs addressed? Only one peer-reviewed study seems to have followed up with 2-1-1 callers to assess outcomes of the referrals they received (Saxton, Naumer, & Fisher, 2007). In that small sample study, 27% of callers reported that their problem had been resolved, although the follow-up interval was not reported and

no attempt was made to determine how callers who had resolved their problems differed from those who had not.

Equally unknown is whether certain individuals are more likely than others to receive help and whether getting help depends on the nature of caller's request. For example, receiving assistance could vary based on caller characteristics, life circumstances, or the availability of resources from different types of service agencies. Of particular interest in this population is the role of unmet basic needs such as food, shelter, and safety. These hardships are common reasons for people calling 2-1-1 (Alcaraz, et al., 2012), and meeting these needs often supersedes addressing other life challenges (Kerner, Dusenbury, & Mandelblatt, 1993).

To determine whether callers in this particularly vulnerable population receive the assistance they seek when calling 2-1-1 is important. Having unmet basic needs would seemingly increase a person's chances of receiving social service assistance (Wu & Eamon, 2010a; Pilkauskas, Currie, &

Garfinkel, 2012), perhaps through greater eligibility for benefits because these hardships are associated with income-based measures of poverty (Iceland & Bauman, 2007; Shaefer & Ybarra, 2012). On the other hand, having unmet basic needs could be an obstacle to obtaining needed services if it diminished awareness of, attention to, or persistence in pursuing referrals (Kissane, 2003; Remler & Glied, 2003; Wu & Eamon, 2010b).

This article presents findings from the first comprehensive and longitudinal tracking study of 2-1-1 referral outcomes and discusses how the findings can be used to enhance 2-1-1 services. Understanding the process of problem resolution—and how it may vary by individual life situations—is critical for information and referral systems such as 2-1-1 and the myriad service agencies to which they refer callers. It will not only quantify the social impact of a national information and referral service, but also identify weak links where clients are dropping out of the system and help determine how clients with different need profiles fare in the system. All three types of information are needed to understand how well current practices are working and to guide enhancements to this critical social service.

This study includes data from 1,235 adults who called 2-1-1 Missouri over a two-year period from 2010 to 2012. One month after their original 2-1-1 call, they were asked whether they remembered receiving each referral from 2-1-1, tried to contact a referral (or why they did not), reached the referral, and received assistance (or why they did not). The degree to which each of these action steps was associated with resolving the caller's problem and how each was associated with the number of unmet basic needs reported by the caller at baseline were explored. Finally, the relationship between type of unmet basic needs and problem resolution by the one-month follow up was examined.

Methods

Study Setting

The 2-1-1 system currently operates through 270 state and local call centers serving all 50 states and covering more than 90% of the U.S. population. In 2013, 2-1-1 received 15.6 million calls (<http://www.211us.org>). In Missouri, where the current study took place, 2-1-1 serves 99 of 114 counties in the state,

as well as 9 counties in southern Illinois. In 2013, 2-1-1 Missouri received 160,000 calls.

About half of 2-1-1 calls are operated through the United Way, while the rest are funded through a variety of nonprofit and government entities. Each 2-1-1 maintains a resource database containing information about a wide range of service providers in its coverage area, including eligibility information, application procedures, and service locations of government agencies, nonprofit, and faith-based organizations. While the demographics of callers can vary across 2-1-1 call centers, callers are disproportionately low income, female, and minority, and most are calling for help with meeting basic needs, such as utilities, food, or housing (Eddens, Kreuter, & Archer, 2011; Purnell et al., 2012).

Study Design

This article reports findings from a secondary analysis of data collected for a larger study addressing health needs of 2-1-1 callers (Kreuter et al., 2012). Participants were a random sample of adult callers (18 years and older) to 2-1-1 from June 2010 to June 2012. After receiving standard service, these callers were asked to complete a brief health risk assessment, and those with at least one risk were invited to participate in a follow-up study. Participants not assigned to the control group received a verbal referral from 2-1-1 for any health need identified in the health assessment and by random assignment also may have received either a mailed reminder of the health referral or access to a telephone health coach. The original study included a baseline assessment administered immediately after the initial call to 2-1-1 and telephone follow up interviews at one and four months. This secondary analysis includes data about the original 2-1-1 call, data from the baseline interview, and call outcomes collected at the one-month follow-up. The study received institutional review board approval.

Measures

Routine record keeping by 2-1-1 provided information on each participant's *reason for calling* 2-1-1 and the *referrals* they received during standard service (i.e., before any health-related assessments or referrals were administered). These data include up

to three referrals each for up to three reasons for calling for a total of up to nine referrals¹. *Reasons for calling 2-1-1* were consolidated into eight broad categories: utilities, rent/mortgage, housing, food assistance, employment, home and family, health, and other. In the interest of parsimony, only the results from the first service request and up to three referrals for the first service request are presented here.

Referral outcomes were measured at one-month follow-ups for each of the reasons a participant called 2-1-1. Participants first were asked if they remembered the reason(s) they had called 2-1-1 (yes/no). These questions were tailored to their reason for calling, for example: "You called 2-1-1 on [date of study enrollment] and asked about [getting help with utility bills]. Do you remember that request?" If participants remembered the reason for calling, they were then asked, "The information specialist you talked to gave you referrals to help with this issue. Do you remember receiving these referrals?" Those who remembered were then asked if they had attempted to contact any of the referrals they received to help address the particular issue (yes/no/don't remember). Participants that did not try contacting a referral were asked to indicate why not from a list of possible reasons (did not want to go through application process/did not need or needed help that day/had to use website or computer to access information/ not enough time/don't remember/other). If they indicated "other," they were asked to give a specific reason; these open-ended responses were then coded into recurring themes (problem resolved by other means/lost the phone numbers/waiting to call/already knew or had tried the referrals received/referrals unhelpful).

Participants who tried to contact a referral were then asked if they actually reached the referral agency (yes/no/don't remember) and, if so, the result of the call (received assistance/did not qualify for services/could not meet paperwork requirements/required length of time to access services had not passed/person at agency was rude or not helpful/reluctant to call back after initial attempt/didn't know how to ask for what they needed/referral did not have funds/other/don't

remember). Participants were allowed to select multiple responses.

Problem resolution was measured with a single item. For each reason participants called 2-1-1, they were asked at the one-month follow-up whether that problem had been resolved (yes/no).

Unmet basic needs were measured at baseline using items derived from Segal, Silverman, and Temkin's (1993) personal empowerment scale and a scale of unmet basic needs from Blazer, Sachs-Ericsson, and Hybels (2005). Participants were asked about the likelihood that they would have seven basic needs met in the next month: personal physical safety, neighborhood safety, money for necessities, money for unexpected expenses, a place to stay, sufficient living space, and enough food. Questions included: "How likely is it that you will have enough money in the next month to deal with unexpected expenses?" "How likely is it that you will have enough money in the next month for necessities like food, shelter, and clothing?" "How likely is it that you will have a place to stay for all of next month?" "How likely is it that you and others in your home will get enough to eat in the next month?" and "How likely is it that someone will threaten to hurt you physically in the next month?" (1 = very unlikely to 4 = very likely). In addition, they were asked, "Considering the number of people living in your home, would you say you have—?" (1 = Not enough space, 2 = About the right amount of space, 3 = More than enough space). They were also asked to rate the safety of their neighborhood (1 = very unsafe to 4 = very safe).

For these analyses, each basic needs item was recoded into a dichotomous variable indicating that the person was likely or very likely (vs. unlikely and very unlikely) to have the unmet need, not have enough space in their home (vs. right amount or more than enough space), or live in unsafe or very unsafe neighborhood (vs. safe or very safe). These dichotomous variables were also summed to create a basic needs index with values ranging from 0 to 7, indicating the total number of unmet basic needs each caller reported.

Analysis

To describe the sequence of potential actions that followed each participant's receipt of a referral from 2-1-1, a flow diagram of referral outcomes was created. Because each step in this process is contingent

¹The Alliance of Information and Referral Systems (AIRS) standard requires giving a minimum of three referrals if available, but callers can receive more if needed. For this study, only information about the first three referrals was recorded.

upon completing a prior step (e.g., participants who did not try contacting a referral could not reach the referral), there is a descending sample size as the action sequence progresses. All responses are, therefore, reported as a proportion of those who reached that step. At each step, the proportion of participants that indicated the problem had been resolved is also reported.

The association between the number of unmet needs and referral outcomes (i.e., remembering the referrals, attempting to call the referrals, reaching a referral, receiving assistance, and problem resolution) was examined using *t*-tests. To examine the relationship between specific unmet basic needs and problem resolution, a logistic regression analysis to predict problem resolution was conducted that included the number of unmet basic needs, dummy variables for the seven reasons for calling 2-1-1 (with “other” as the reference), number of service requests, receiving assistance (yes vs. no), study group (referral only/mailed reminder/health coach vs. control), age, sex, race (black/other vs. white), annual income (< \$15,000 vs. ≥ \$15,000), years of education completed (< 12 years vs. ≥ 12 years), employment status (employed vs. other) and child in home (yes vs. no). Odds ratios and 95% confidence intervals are presented. All analyses were conducted using SAS version 9.4 for Windows.

Results. Most callers in the sample were women (86%), African American (60%), and had an annual income of less than \$15,000 (68%); 27% had completed less than 12 years of education; 19% were employed; and half (52%) had a child under the age of 18 living in the home (see Table 1). Most callers (59%) requested help for one problem only, and the greatest number of requests were in the category of “utilities” (requested by 51% of participants). A large majority of callers indicated they would not have enough money for unexpected expenses (90%) or necessities (70%) in the next month, with proportionately fewer callers expressing unmet basic needs related to housing (16%–27%), food (15%), or personal and neighborhood safety (5%–22%).

Figure 1 shows a flow chart of referral outcomes. Nearly all participants (93%) remembered receiving the referrals; 91% of those who remembered receiving the referrals attempted to contact at least one referral; and 82% of those reached a referral. Of the 9% who did not attempt to contact any referrals, 37% indicated

Table 1. Sample Characteristics (*N* = 1235).

Demographics	% or mean (SD)
Age	43.5 (13.0)
Female	85.5
African American	59.8
Income <\$15,000	67.7
Education <12 years	26.9
Employed	19.2
Child living in home	52.2
Reason for calling 2-1-1 (first request)	
Utilities	50.9
Rent/mortgage	13.2
Home and family	13.7
Food assistance	6.0
Health	5.2
Housing	4.0
Employment	1.7
Other	5.4
Number of service requests	
1	58.6
2	25.3
3	16.0
Unmet basic needs	
Number of unmet basic needs	2.4 (1.2)
Not enough money for unexpected expenses	89.6
Not enough money for necessities	70.0
Not enough space	26.9
Unsafe neighborhood	21.6
No place to stay	15.5
Not enough to eat	15.0
Physical threat	4.9

that they did not have enough time, 16% had resolved their problems by other means, 8% were waiting to call, and 7% had lost the phone numbers.

Of those that reached at least one referral, 36% indicated that they received assistance. The most common reasons for not receiving assistance were the referral agency not having funds (34%) and the caller not qualifying for services (25%). Callers were most likely to receive assistance from referrals for food assistance (67%) and least likely to receive assistance from referrals for housing (17%). Assistance rates for the two most common reasons for calling were for utilities (35%) and for rent/mortgage (25%).

Problem resolution could occur with or without receiving assistance from a referral agency. Overall, about half of all participants reported at the one-month follow-up that their problem had been resolved. The rate of problem resolution was highest among those that contacted a referral and received assistance (70%) and lowest among those that contacted a referral but did not receive assistance (41%). Among participants who had no contact with a referral (i.e., did not attempt to contact a referral or tried but did not reach a referral), 53% reported that their problem had been resolved. Problem resolution rates for all callers (*n* = 1,176) by reason for calling ranged from 25% for employment to 64% for food assistance.

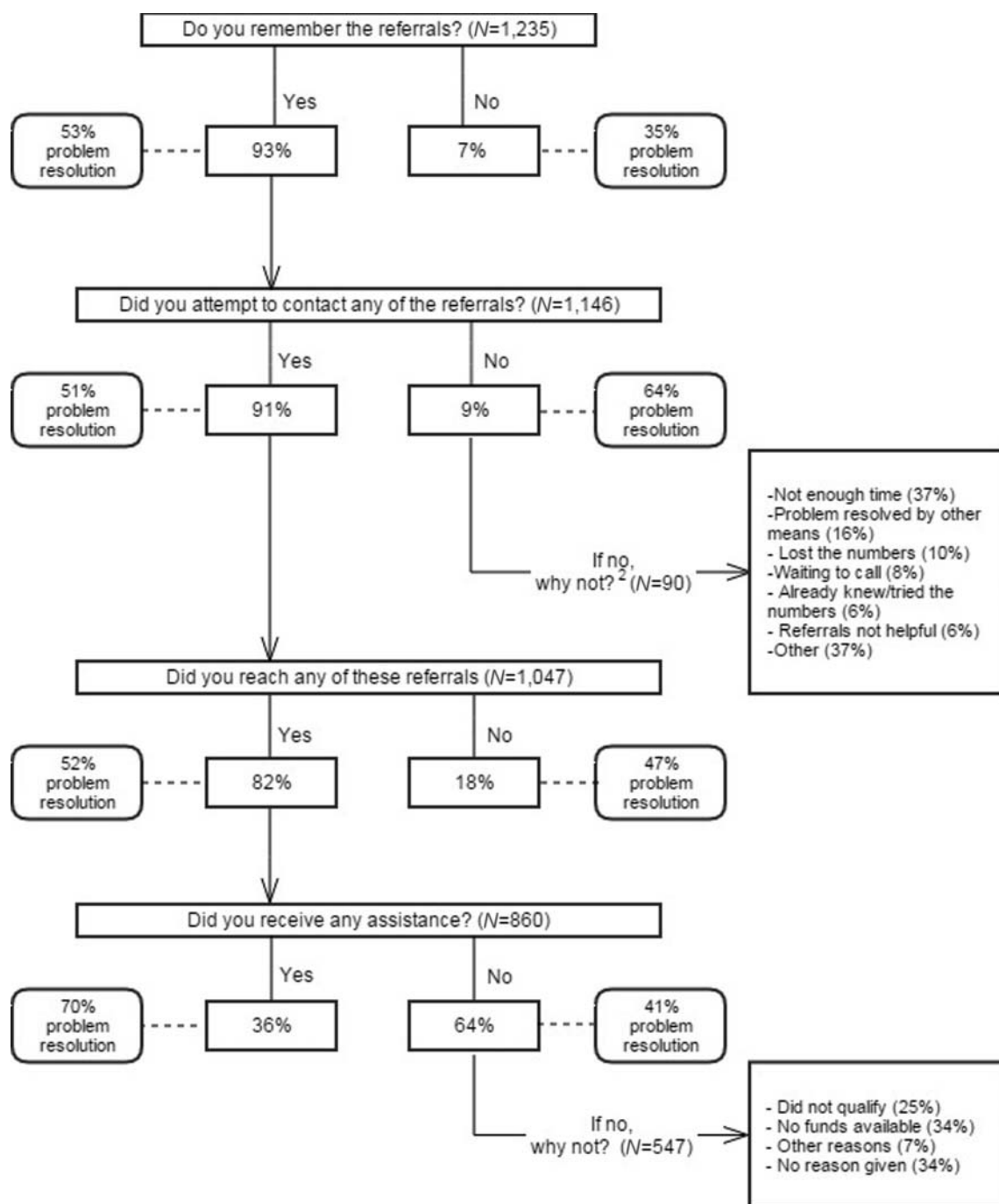


Figure 1. Flow Diagram of 2-1-1 Referral Outcomes¹ Data are presented for up to 3 referrals for the first service request. ²Responses were open ended, and only the most common responses are shown here.

Table 2. Mean (Standard Deviation) Number of Unmet Basic Needs by Referral Outcomes.

Outcome	Yes	No	t-value	p-value of t-test
Remembered the 211 referrals (N = 1,235)	2.43 (1.19)	2.56 (1.45)	-1.03	0.3054
Attempted to call 211 referral (N = 1,146)	2.44 (1.18)	2.18 (1.26)	2.03	0.0424
Reached a 211 referral (N = 1,048)	2.42 (1.25)	2.45 (1.16)	-0.26	0.7912
Received assistance (N = 860)	2.35 (1.18)	2.50 (1.15)	1.73	0.0834
Resolved problem				
All participants (N = 1,176)	2.29 (1.20)	2.59 (1.24)	-4.29	<0.0001
Received assistance (N = 290)	2.20 (1.22)	2.62 (1.06)	-2.79	0.0056
Did not receive assistance (N = 886)	2.32 (1.19)	2.58 (1.26)	-3.07	0.0022

The association between referral outcomes and unmet basic needs was also examined (see Table 2). The number of basic needs was not associated with participants remembering the referrals, reaching the referrals, or receiving assistance. However, callers who attempted to contact a referral had significantly more unmet basic needs than those that did not attempt to call a referral. Problem resolution also differed by unmet basic needs. Those who reported at the one-month follow-up that their problem had been resolved reported significantly fewer unmet basic needs at baseline. This finding was true even among those that had received assistance.

Results of the logistic regression predicting problem resolution at the one-month follow-up by specific unmet basic needs at baseline are shown in Table 3. Participants that did not have enough money for necessities (OR: 0.62; CI: 0.45–0.84) and those who felt likely to be threatened physically in the next month (OR: 0.29; CI: 0.15–0.57) were significantly less likely to report at the one-month follow-up that their problem had been resolved. Those who had received assistance from a referral were three times more likely (OR: 3.0; CI: 2.2–4.1) to have resolved their problem than those who did not receive assistance. The more problems for which someone requested referrals, the less likely that person would solve their first problem (OR: 0.79; CI: 0.67–0.94). Additionally, the older a caller was, the less likely the caller was to resolve the problem (OR: 0.99; 0.87–1.00). African Americans (OR: 0.66; CI: 0.49–0.88) were less likely than Whites to report that their problem had been resolved.

Discussion

An overwhelming majority of 2-1-1 callers in the study attempted to contact the referrals they received, and most succeeded in reaching them. However, only one in three callers that reached a referral reported that they received assistance. Callers were most likely to receive assistance for referrals related to food assistance and least likely to receive assistance for referrals related to housing.

Receiving assistance from a referral was strongly associated with problem resolution. Among callers who received assistance, 70% reported that their problem (the reason they called 2-1-1) had been resolved. By comparison, among callers that contacted a referral but did not receive assistance, only 41% reported problem resolution. This study found a somewhat higher problem resolution rate (36%) than the 27% rate reported by Saxton et al. (2007), although the small sample size of that study ($n = 30$) makes it difficult to determine whether the difference is meaningful. In regression analyses, receiving assistance was the strongest predictor of problem resolution, increasing the odds of problem resolution threefold (OR = 2.9, CI: 2.1–3.9). Finally, callers who attempted to reach referrals had more unmet basic needs at baseline than those who did not attempt to reach referrals. However, they were also less likely than other callers to report having their problems resolved at the one-month follow-up, even when they received assistance from the referral they contacted.

Table 3. Results of Multivariate Logistic Regression Predicting Problem Resolution ($N = 1,113$).

	Beta (Standard error)	Odds ratio	95% Confidence Interval of Odds Ratio	
Not enough money for unexpected expenses	0.154 (0.233)	1.166	0.739	1.841
Not enough money for necessities	-0.487 (0.159)**	0.615	0.450	0.840
Not enough living space	-0.120 (0.150)	0.887	0.661	1.189
Unsafe neighborhood	-0.253 (0.162)	0.776	0.565	1.066
No place to stay	-0.337 (0.178)	0.714	0.504	1.012
Not enough to eat	0.234 (0.182)	1.264	0.885	1.805
Physical threat	-1.223 (0.336)***	0.294	0.152	0.569
Received assistance	1.102 (0.155)***	3.010	2.220	4.082
Number of service requests	-0.236 (0.086)***	0.790	0.667	0.935
Health coach	-0.054 (0.191)	0.947	0.651	1.379
Health referral only	-0.138 (0.190)	0.871	0.600	1.264
Mailed health reminder	-0.297 (0.189)	0.743	0.513	1.076
Age	-0.015 (0.006)*	0.985	0.974	0.997
Female	-0.217 (0.188)	0.805	0.557	1.162
African American	-0.417 (0.148)**	0.659	0.493	0.881
Other race	0.042 (0.235)	1.042	0.658	1.650
Income <\$15,000	-0.111 (0.148)	0.895	0.670	1.196
Education <12 years	-0.117 (0.147)	0.889	0.667	1.186
Employed	-0.032 (0.174)	0.968	0.689	1.361
Child in home	0.189 (0.155)	1.208	0.893	1.636

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Three conclusions can be drawn from these findings, each with practical implications for information and referral systems and health and social service organizations. First, the expressed needs for health and social service assistance among 2-1-1 callers exceed by a substantial margin the current capacity of local agencies in Missouri. This finding is particularly true of requests for help paying rent, utilities, and other bills; 67% of those contacting a referral for these needs did not receive assistance. Even for service requests such as food assistance and health services, which were more likely to be met, 40% of callers reported that they did not receive assistance after reaching the referral. Most commonly, callers reported that agencies did not have funds available (34%) or callers did not qualify for available assistance (25%).

It is difficult to discern whether these help rates are higher or lower than those found in other 2-1-1s because published information is relatively scarce. What is available tends to focus on cost-benefit analyses and business plans (Saxton et al., 2007; Shank & Rosenbaum, 2003; Shank, 2012), not resource levels of community service agencies. Although many 2-1-1s routinely follow-up with callers, such evaluations often lack the sampling and protocol rigor that can come with funded research and are rarely published in peer-reviewed scientific journals or even shared online.

As other 2-1-1s share similar data, a clearer picture of the gap between community needs and helping resources will likely emerge. In the meantime, 2-1-1s and other information and referral systems can make the help-seeking process more efficient for callers and service agencies by sharing real-time data about the availability of resources and/or screening for eligibility. Some 2-1-1 systems do this already (Rodgers & Purnell, 2012). While this may reduce the number of referrals provided to any given caller, it should increase the proportion of help-seekers who receive needed assistance and reduce the number of ineligible callers with which a service agency interacts.

Second, these findings demonstrate how 2-1-1 helps callers resolve their problems. Nearly all callers attempted to contact the referrals they received from 2-1-1, and those who reached a referral and received assistance were much more likely to report one month later that their problem had been resolved. However, as Figure 1 also illustrates, there are significant missed opportunities in the sequence of events between

receiving a referral from 2-1-1 and resolving one's problems.

In one-month follow-up surveys, about 15% of 2-1-1 callers either did not remember receiving a referral or did not attempt to contact a referral they received. Of more concern, 18% of those who tried to contact a referral agency did not reach anyone, and 64% of those who did reach someone did not receive assistance. Because there appear to be clear benefits for callers who connect with service agencies and receive assistance, minimizing these leaks in the pipeline should increase resolution of problems.

Understanding how and why leaks occur could lead to strategies that 2-1-1 systems might adopt to prevent future missed opportunities. For example, the proliferation of mobile phone penetration among 2-1-1 callers (Purnell, Griffith, Eddens, & Kreuter, 2014) makes it feasible to provide referrals as text messages that may be more likely to be retained, less likely to be lost or forgotten, and faster and easier to act upon. Referrals also can be shared directly with a service agency so that the agency can initiate contact with someone in need rather than waiting on the person to call. This proactive method has been associated with increased success in stopping smoking among those using a telephone tobacco quitline (Guy et al., 2012).

The relatively high rate of callers who reported contacting a referral but not reaching anyone is disconcerting. It is unknown whether this reflects contact attempts that occur after business hours, contact attempts that occur when demand exceeds staffing capacity to respond, or perhaps callers who do not leave call-back information in a recorded message. By using technologies like caller ID and even minimal, rudimentary tracking and follow-up protocols, service agencies should be able to reduce dramatically the number of missed connections. Based on findings from this study, cutting this failure rate in half—from 18% to 9%—would result in a 3% increase in receiving assistance among all callers to a 2-1-1; that is 3,000 more callers per year for a 2-1-1 that receives 100,000 calls annually.

Third, these findings highlight the complex challenges faced by 2-1-1 in meeting the needs of a diverse group of callers. Older callers were less likely to report that their problems had been resolved, although the effect was small. This outcome could be due to age-related health issues that limit daily activities or transportation options or possibly confusion

about program requirements (Fuller-Thomson & Redmond 2008; Geiger 2014; Schoenberg & Coward, 1998).

African American callers were more likely than White callers to report that their problems had been resolved, even after controlling for income, education, and other sociodemographic variables. Only 32% of African American callers reported receiving assistance, versus 46% of White callers. Possibly, African American callers to 2-1-1 face additional hardships or experience racial discrimination not measured in this study that reduce the likelihood of problem resolution. In addition, predominantly African American neighborhoods tend to have less access to basic needs assistance than predominately White neighborhoods because social service agencies are not necessarily located in areas close to the low-income minorities that need them most (Allward, 2008). African Americans living in poverty also often have less access to help from private safety nets (family and friends) to help make ends meet during times of crisis (Gould-Werth, 2014).

Although 2-1-1 callers, in general, are economically vulnerable (Kreuter et al., 2012), many live in a heightened state of deprivation without sufficient basics such as food, housing, personal safety, and money for necessities. These findings show that callers who had more unmet basic needs were more likely to contact a referral agency than callers with fewer unmet basic needs, but were actually less likely to report at the one-month follow-up that their problem had been resolved, even when they did receive assistance. In particular, callers who felt it was likely or very likely that they would be physically threatened by someone or not have enough money for necessities were significantly less likely to have their problems resolved.

There are many possible explanations for this finding. Individuals with unmet needs may face other barriers such as poor physical and mental health and difficulty in obtaining or maintaining employment (Heflin, Corcoran, & Siefert, 2007; Heflin & Iceland, 2009; Romero, Chavkin, Wise, & Smith, 2003; Wu & Eamon, 2010b) that could interfere with securing assistance or otherwise resolving their problem. Eligibility requirements for some services may be at odds with certain basic needs and, therefore, discourage otherwise eligible people from applying and receiving benefits. For example, Temporary Assistance for Needy Families

(TANF) requires single-parent applicants to establish paternity and obtain child support, which may put the abused at risk. While waivers for these requirements exist, they require disclosure of the abuse to case managers, which may be avoided for other reasons (Bush & Wolfer, 2002).

Implications for practice and research. For a majority of callers to 2-1-1, the problems that led them to call are not fully resolved one month later. There appear to be two main reasons for delay: (1) a large gap between the magnitude of caller needs and the resources available from community service providers to meet those needs; and (2) characteristics of callers that reduce the likelihood that their problems are resolved. Addressing these issues requires at least a twofold strategy. First, short of a substantial and lasting influx of new resources to support the needs of low-income families, improving information about resource availability within 2-1-1 resource databases could reduce the number of callers who contact referrals only to learn that assistance is unavailable. The findings from further call outcome studies may help inform such work between 2-1-1 systems and community health and social service agencies to reduce the mismatch between caller needs and available services.

Second, 2-1-1 staff and administrators should focus on identifying those callers most at risk of not resolving their problem through standard services and develop alternative, and likely more intensive, service models for these clients. Such solutions could include the adaptations suggested above involving use of technology (text messaging) and process improvement for service agencies (proactive agency contacts).

Additional call outcome studies could provide more information about what factors are related to successful problem resolution and why certain groups of callers have poor outcomes. Additionally, modifications to the service model targeted toward those with more unmet needs or toward specific demographic groups could be tested for improved outcomes for these callers.

Conclusion

This study is the first to report 2-1-1 call outcomes linked to caller characteristics and, moreover, to do so in a large random sample of callers from a statewide 2-1-1 system. Among the study's strengths are its detailed tracking and reporting of follow-up response

rates and recording and analysis of standardized outcomes measured with a multi-item assessment.

Although this study took place in a statewide 2-1-1 system and previous studies have found similar caller profiles across multiple 2-1-1s nationally (Purnell et al., 2012), these findings may not generalize to other 2-1-1s or other information and referral services because of variability in local resources available. Similarly, participants were those that were eligible and consented to be part of a study and could be reached at follow-up. This subgroup could have different characteristics than the larger 2-1-1 population. Based on available information collected from all callers to 2-1-1 during the recruitment period, the mean age of participants was similar among study participants and nonparticipants, but women were slightly more likely than men to participate.

The goals of this study were to understand how callers to 2-1-1 use the service, to track whether they resolved their problems, and to determine whether outcomes varied for clients with different need profiles. The results show that 2-1-1 is highly effective in connecting callers to needed services, although the majority of callers do not receive assistance for their problem. When assistance is received, problem resolution increases dramatically, although not all callers accrue this benefit equally. Future research could provide a deeper understanding of how callers use 2-1-1 and other resources to resolve their problems. Such research, coupled with improvements in implementation consistency, efficiency, and use of technology, could greatly increase the proportion of callers who benefit from these systems.

Funding

This research was supported by a grant from the National Cancer Institute (P50-CA095815).

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