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WELCOME MESSAGE

ORIGINAL RESEARCH

CASE REPORT

RESEARCH SPOTLIGHT

AIM

The *Annals of Emergency Dispatch and Response (AEDR)* is an official international peer-reviewed journal published by the International Academies of Emergency Dispatch®. The journal provides a unique opportunity for researchers in the fields of emergency dispatch, emergency response, pre-arrival medicine, public safety, public health, and emergency nurse telephone triage and instructions to share their work worldwide. The *AEDR* journal avails a perfect platform to demonstrate the importance of research and development in emergency dispatch, the cornerstone of emergency care.

SCOPE

The *Annals of Emergency Dispatch and Response* journal accepts and publishes research conducted within the domains of emergency medical dispatch, emergency fire dispatch, emergency police dispatch, emergency response, emergency nurse telephone triage and instructions, and public health and public safety telecommunications. The articles include original research, case reports, editorials, perspectives, concepts (e.g., systems public health and public safety tele-communications, and configurations, methods etc), and/or reviews. The journal also accepts operational research conducted within the above domains.

Welcome Message from the Editor-in-Chief

This issue of AEDR contains two very intriguing studies that, on the surface, seem completely unconnected. Yet numerous important topics in emergency dispatch have subtle interdependencies when one chooses to look a little closer. One study, conducted with the participation of focus groups representing some of Utah's diverse communities, tells us how members of those communities make their decisions to call 911, why they may not call even when true emergencies present to them, and what factors most influence their decision-making to call or not to call, including a finding that we may not always be providing the right services for these communities when their members are most in need of help. These findings are timely and important, given the nationwide effort already underway to examine the role of law enforcement response—and what 911 can do to help facilitate less aggressive response and assistance from services such as mental health and social services—particularly to respond to and manage situations that don't involve violence, robbery, traffic problems, or serious crimes. Likewise, EMS and the fire service are also a part of that discussion. This issue's '911 Attitudes' study will help us understand how persons in certain diverse communities perceive emergency services available via 911, helping us to shine a light on potential system shortcomings and provide the information needed to make improvements.

Another study continues this journal's exploration of the wellbeing of the emergency dispatcher in the workplace. Not only are the common sources of stress identified, so also are the coping mechanisms of emergency dispatchers, as well as employer stress mitigation strategies—actions that may be key to reducing on-duty stress.

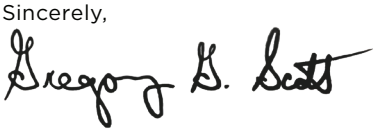
One common element of these two seemingly disparate studies, is the need to address the fear, anxiety, confusion, and stress that is experienced by those associated with emergency calls—both for the emergency dispatch professional and for the potential 911 callers among the public who deserve an effective and suitable response to their needs.

Can we improve the system for both those who work in it, and those in the public for whom we intend our critical services to benefit? Taken together, these two studies suggest the answer is 'yes' on both counts—yet it is up to us to find solutions and act on them.

Our Research Spotlight showcases an IAED stalwart with a rich background in helping solve some of the most pressing research questions of our time. He went from researching malaria and AIDS in Africa, where those two diseases have killed hundreds of thousands over the years, to helping us improve IAED protocols and the emergency dispatching profession overall.

Finally, as we wrap up a second pandemic-stricken year—one that has once again pushed emergency services to the limit—we, the editorial staff of the AEDR, salute you, the emergency dispatch professionals who continue to work diligently and inconspicuously to protect and serve your communities.

Sincerely,



Greg Scott, MBA, EMD-QI, Editor-in-Chief

911 Attitudes, Barriers, and Experiences Among Diverse Communities in Utah

Edward Trefts, MFA[1], Jennifer Hurst[1], Alissa Wheeler[1], Eru (Ed) Napia[2,3], O. Fahina Tavake Pasi, MS[2,4], Tatiana Allen-Web[2,5], Preston Hilburn[2,6], Heather Brown, Med[2,5], Louisa Stark, PhD[2,5], France A. Davis, PhD[2,7], Valentine Mukundente[8], Jeanette Villalta[9], Ana Sanchez Birkhead[10], Isabel Gardett, PhD[1], Greg Scott, EMD-QI, MBA[1], Christopher Olola, PhD[1]

1. International Academies of Emergency Dispatch, Salt Lake City, Utah, USA.
2. Community Faces of Utah, Salt Lake City, Utah, USA.
3. Urban Indian Center, Salt Lake City, Utah, USA.
4. National Tongan American Society, Salt Lake City, Utah, USA.
5. University of Utah Center for Clinical & Translational Science (CCTS), Salt Lake City, Utah, USA.
6. Equality Utah, Salt Lake City, Utah, USA.
7. Calvary Baptist Church, Salt Lake City, Utah, USA.
8. Best of Africa, Salt Lake City, Utah, USA.
9. Hispanic Health Taskforce, Salt Lake City, Utah, USA.
10. Hispanic Health Care Task Force, Salt Lake City, Utah, USA.

Corresponding Author
Christopher Olola, PhD
Director of Biomedical Informatics & Research
International Academies of Emergency Dispatch
110 S. Regent St
Salt Lake City, Utah 84111, USA.
Chris.olola@emergencydispatch.org
+1-385-715-0763

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ABSTRACT

Background: Previously, researchers have identified barriers and facilitators to using 911 in Black and Hispanic communities. However, there are many other groups that have access to 911 service, who have not yet been represented in the literature. Prior to this study, a Community Engagement Studio (a focus group forum) was held to solicit input from representatives of various diverse communities in Salt Lake Valley on their attitudes, experiences, and perceptions of their local 911 services.
Objectives: The objective was to identify attitudes, barriers, and experiences in utilizing 911 service among certain diverse communities in Salt Lake County, Utah, USA that may be underserved by 911 communication centers.
Methods: The researchers held focus groups at five study sites in Salt Lake County. A total of 65 participants were recruited into the study by community advisory board representatives. Focus group discussions covered topics related to challenges with using 911 and other aspects of participant experiences. The analysts shared detailed descriptions of themes with community members for feedback.
Results: The study identified seven significant barriers to calling 911: anxiety/fear, mistrust, privacy, ambiguity, financial, structural, and language. The major themes that emerged, which described experiences and attitudes, were making difficult decisions, disconnect from 911, and using 911 is risky.
Conclusion: The results demonstrated significant implications for the development of targeted 911 education that better addresses the ambiguities and risks perceived in emergency situations, as well as the provision of cultural training for emergency dispatch professionals and the diverse communities.
Keywords: 911 Education, Attitudes, Barriers, Expectations, Diverse Communities, Emergency Dispatch

BACKGROUND

Designed to be simple to use and easy to remember, the 911 emergency telephone number was created to increase public access to emergency response services.[1] The creators of this number also intended to reduce delays in the provision of emergency care after individuals decide to message for help. Though it is meant to be easy to use, the 911 system is complex and involves many participants.[1] A typical emergency 911 call, for instance, might involve a caller, call-taker, dispatcher (who could also serve as a call-taker), and those, such as police, fire officials, or medical professionals, who are dispatched to the scenes of emergencies. Adding to this complexity, the 911 system consists of Public Safety Answering Points (PSAPs) that operate independently of each other. These PSAPs might have very different local practices, frustrating attempts to establish national standards for the emergency dispatching profession. In this way, the 911 system exemplifies the complexity and fragmentation that arguably defines modern governance.[2]
Despite challenges associated with a still developing 911 system, research has indicated that the 911 telephone number positively impacted public access to the EMS system.[3] Currently, the 911 number is widely used, and the system that has developed around it is quite large. In the United States, for instance, there are nearly six thousand PSAPs, and it is estimated that these agencies receive about 240 million 911 calls occur per year.[4]

Recently, reported events in the news media as well as several published studies 5-8 have suggested those from diverse communities or those with low socioeconomic status are less likely to benefit from 911 service compared to the rest of the population. One explanation for this disparity may be that people in these communities could be reluctant to call for help due to factors such as lack of understanding of available services, fear of arrest, or desire to avoid costs such as expensive ambulance transport to the hospital.[9] Other factors associated with an aversion about calling 911 include having the preconceived notion that accessing 911 will not yield the desired outcome, as well as the general suspicion of institutional authority. Research in this area has encouraged the development of targeted interventions designed to improve health outcomes in these communities.

Previously, researchers have identified barriers and facilitators to using 911 in Black and Hispanic communities.[5] However, there are many other groups that have access to 911 service, who have not yet been represented in the literature. Obviously, there are other racial categories beside the ones mentioned above, such as those that belong to American Indian or Pacific Islander racial groups; as well, there are diverse immigrant communities throughout the United States. Lastly, to the knowledge of the authors, there have been no studies that look at those who belong to Lesbian, Gay, Bisexual, Transgender and Queer (LGTBQ) communities and their attitudes to 911 service. Research that involves participants from other diverse groups might uncover novel barriers to using 911 or new insights into overcoming previously identified barriers.

The International Academies of Emergency Dispatch (IAED) is the world's leading institution for developing emergency dispatch standards, training emergency dispatchers, and certifying them in the use of structured calltaking protocols for handling police, fire, and medical emergencies. As part of its mission, the IAED seeks to find better ways to provide emergency services to the public at large, particularly in the area of 911 service.

On November 9, 2017, the University of Utah Center for Clinical and Translational Science (CCTS) held a Community Engagement Studio—sponsored by the IAED—to solicit input from representatives of various communities in Salt Lake Valley on their attitudes, experiences, and perceptions of their local 911 services. Designed to assist researchers in establishing the feasibility and justification for a comprehensive study, 10 the Community Engagement Studio is a relatively new, academically recognized process for collecting information on a potential study topic. At the Community Engagement Studio, the CCTS facilitators posed a number of discussion questions to ten community representative volunteers attending the session. This session was audio recorded and written notes were made by the facilitators contemporaneous to the discussions.

The Community Engagement Studio revealed a number of issues worth exploring in a comprehensive study. Participants demonstrated a wide range of opinions, concerns, expectations, and perceptions regarding 911 services. As a result of the session, the IAED research team identified six diverse communities in Salt Lake Valley to participate in a study evaluating their experiences and attitudes concerning calling 911 service.

OBJECTIVES

The objective of this study was to identify attitudes, barriers, and experiences in calling 911 service in certain diverse communities that may be underserved by 911 communication centers. In particular, the investigators were interested in what prevents people from calling 911 service when it would be appropriate, what attitudes and experiences people have about calling 911 service, and how community differences might affect attitudes and willingness to call 911 service for help.

METHODS

Study design

This was a prospective qualitative, focus group-based study, involving participants from six diverse communities in Salt Lake Valley, Utah, USA. The community-based participatory research principles informed this study's research methodology. Prior to obtaining ethical approval from the IAED Institutional Review Board (IRB), two organizations – the IAED and CCTS – collaborated by forming a Community Engagement Studio. This studio solicited input from community representatives about the design of a study on barriers and attitudes to 911 service. This input included feedback on which questions should be included in the interview protocol, and which Salt Lake County communities should be invited to participate. Soliciting input from community members is a crucial aspect of community-based participatory research that intends to inform effective interventions.[10]

In addition, this study used qualitative methods. The researchers decided that focus groups would be the most appropriate technique for gathering information about participants' attitudes toward the 911 emergency telephone number and the services associated with this number. The focus groups were conducted by members of the IAED Academics, Research, and Communications research team in collaboration with members of the Community Faces of Utah (CFU), a community-based organization with well-established community outreach programs. CFU aims at enriching diverse communities in Utah with the knowledge to enable them to build trust, work together, and learn from each other in order to be able to make informed, preventive healthcare decisions to enhance their health. CFU operates in partnership with the university of Utah, State of Utah Department of Health, and five diverse communities—each with its own designated community leader (Best of Africa, Calvary Baptist Church, Hispanic Health Care Task Force, Urban Indian Center of Salt Lake, and National Tongan American Society / Utah). The Equality Utah was also added to represent the LGBTQ community.

The community designated leaders formed the study's community advisory board (CAB)—to help recruit at least 10 study participants from members of their communities. The

CABs chose members of their communities who had been in the US at least long enough to have reasonable knowledge of the US 9-1-1 system. The researchers received ethical approval to complete this research project in 2018 from IAED's IRB.

Context and participants

As of July 1, 2019, Salt Lake County, Utah, USA was estimated to have a population of 1,160,437. 87.1% of these residents are Caucasian; 18.8% are Hispanic or Latino; 2.2% are Black or African American; 1.4% are American Indian, and 1.8% are Native Hawaiian/Pacific Islander. For those under 65 years of age, 11.8% lack health insurance.[11]

Participants (n=65) were selected from the the six formal identity-based communities. Each community was assigned a single CAB member as a liaison to their respective community, recruiter of focus group participants, and subject matter expert as needed.

The researchers held focus groups at five study sites in Salt Lake County: the Calvary Baptist Church, Intermountain Medical Center, the National Tongan American Society headquarters, the Urban Indian Center of Salt Lake, and the Equality Utah offices. Employees from IAED and CCTS attended the focus groups to assist with note-taking and other research-related tasks. For focus groups that primarily had non-English speakers, an interpreter was present to translate responses.

Data gathering

For each focus group, a community moderator and co-moderator from CCTS led a dialogue in accordance with a discussion guide developed by the IAED research team. The discussion guide was shaped by feedback received at the Community Engagement Studio. Focus groups typically lasted 2-3 hours.

The discussion guide covered four main discussion topics: 1) reasons for calling 911, 2) barriers/challenges to calling 911, 3) expectations about 911, and 4) improvements to 911 services. Focus groups were observed in person by study investigators. These investigators used a data collection form to note their observations.

Audio of participant responses was recorded for each focus group. For focus groups with English speakers, audio recordings were transcribed verbatim by members of the research team. In the Hispanic/Latino focus group, Spanish was the primary language spoken by participants. For the African Immigrants focus group, Kinyarwanda, a Bantu language, and Swahili were the primary languages spoken. For the two foreign language focus groups, translation services were used to translate the audio recordings into English.

After transcription of the audio recordings was completed, transcripts were submitted to relevant members of the CAB for corrections, verifications, and/or comments.

Data analysis

The verified focus group transcripts were uploaded to the qualitative research platform Dedoose web application for mixed methods research (version 8.0.35, ©2018, SocioCultural Research Consultants, LLC, Los Angeles, CA, www.dedoose.com) to facilitate the coding of the data by two members of the research team. The process of coding involved condensing text excerpts into summative or descriptive labels, and the literature suggests coding is a necessary first step towards producing a credible qualitative analysis of interview data.

Prior to coding, two analysts reviewed the literature on theoretical orientations for qualitative data analysis. The analysts decided that a phenomenological orientation was best suited for this project. Accordingly, they did not begin the project with a theoretical perspective but instead sought to understand how callers to 911 perceive that phenomenon using concepts that emerge from the data rather than elsewhere. As a result, there were no a priori codes used by the researchers when the analysis process began. However, as the analysis developed, the researchers did consult the literature for assistance in the identification of codes for barriers to 911 service.

The process of identifying codes then arriving at themes describing the data was guided by the six phases of thematic analysis introduced by Braun and Clarke.[12] The analysts identified preliminary codes, and these codes were documented in Dedoose. As larger patterns were identified, the analysts combined these codes into themes and subthemes illustrating important commonalities between participants' responses.

Finally, detailed descriptions of these themes and subthemes were shared with members of the CAB for feedback. This information was shared both through oral presentation and written summary.

RESULTS

A total of 65 participants were included in the study (Table 1). Of these 65, 66.2% were female, 30.7% were male, and 3.1% were non-binary. The most common age group was 38-53 years (29.7%). With respect to the most commonly used language at home, 38.4% of participants reported only speaking English, 35.7% more than one language, 9.2% only Swahili, and 7.6% only Spanish. 9.1% of the participants used other languages such as Kirundi, Navajo, French, Luganda or Ganda, Samoan, and Tongan.

Measure		Percentage (%) [N=65]
Gender	Male Female Non-binary	30.7 66.2 3.1
Age	18-21 22-37 38-53 54-72 73 or older	10.9 26.6 29.7 26.6 6.2
Language Use at Home	English only More than one language Swahili only Spanish only Other	38.4 35.7 9.2 7.6 9.1

Table 1. Demographic characteristics of focus group participants

Barriers

The analysis identified seven significant barriers to calling 911: anxiety/fear, mistrust, privacy, ambiguity, financial, structural, and language (Figure 1).

For instance, many participants stated they were fearful of the possible consequences of calling 911, especially in connection to actions of law enforcement. As one participant stated, when asked why they hesitated to call: "Because everyone is afraid of being deported or like in the news that the police are coming and taking you away." In contrast to the psychological barrier of fear, participant responses also reflected a mistrust of 911 system, which manifested as a belief that calling 911 will probably result in either mistreatment or neglect by emergency dispatchers or first responders. Privacy, too, was a major concern of participants. Sharing personal information (and in some cases, the information of others) was a serious obstacle for many community members when they considered using 911 service. For instance, one community member hesitated to call 911 about a personal situation because news about his family would "spread like the wind." Ambiguity refers to interpretations about what is a genuine emergency. In many cases, participants described being unsure whether specific incidents were in fact genuine emergencies, which can be a barrier to calling 911 when services would otherwise be offered.

Figure 1. Word cloud visualization of identified 911 barriers

Additionally, the cost of an ambulance ride was perceived as a major deterrent to calling 911 service in the case of a medical emergency. Illustrating this barrier, one participant (Equality Utah focus group) explained why they didn't call 911 service when having a miscarriage: "I didn't want to pay for an ambulance ride that I couldn't afford." Interestingly, one focus group frequently discussed structural barriers – most community members had lived on a reservation located at a greater distance from public safety services and medical providers than urban communities in Salt Lake Valley. Therefore, some of their experiences stated about 911 service were of a different character than other focus groups. Participants in this focus group described stories of long wait times and responders having great difficulty finding their locations.

Finally, for some participants that were not fluent in speaking English, language was a barrier, and in some cases, community members considered having someone else call 911 service for them if they had trouble communicating.

Experiences and Attitudes

Thematic analysis applied to focus group transcripts unearthed commonalities between participant attitudes and experiences toward 911 service. These commonalities were reported as major themes and minor themes. The major themes that emerged were 1) Making difficult decisions, 2) Disconnect from 911 service, and 3) Using 911 service is risky (Table 2). Each major theme is composed of minor themes. The first theme labels a common set of experiences identified during the focus groups, while the next two themes describe attitudes held by the community members toward 911 services.

Theme type	Major theme	Minor themes
Experiential	Making difficult decisions	Decision complexities, Areas of ambiguity, Using shortcuts
Attitudinal	Disconnect from 911	911 does not understand our culture, 911 does not ask the right questions, Don't know about 911 service
Attitudinal	Using 911 service is risky	Risking unfair treatment, Risking financial losses, Risking privacy, Risk avoidance

Table 2. Summary of major themes and minor themes

Theme 1: Making difficult decisions

Making difficult decisions describes a common set of 911 service experiences among the diverse groups of participants. When participants considered imagined events during the focus groups, they were often abstract, and therefore the decision to call 911 service appeared quite simple. Community members formulated simple rules of thumb (e.g., "If it's life-threatening, that's when I call 911") in these situations. However, complex decision processes became salient when participants were directed to talk about real-life experiences in which they called or considered calling 911 service. When recounting real-life dilemmas, community members often described experiences in which various difficulties significantly affected the decision about whether to call 911.

Subtheme 1: Areas of ambiguity and decision complexities

The theme of making difficult decisions involved the consideration of multiple factors that contributed to the complexity of one's choice: the practical consequences of calling 911, the alternatives to 911 service as a method of signaling for help (e.g., call the local police number instead), and even surprising aspects, like perceptions of the victim or patient. During one focus group session, for instance, one of the participants described their thought process when a clerk was being harassed late at night at a convenience store. Ultimately, the participant decided to call 911 service, but not before considering the alternative of calling a local police number, saying that "it was probably not quite a 911 call," and that it "would probably be more likely just a police call." Decision complexities also became apparent during another focus group session. For example, a participant talked about encountering "a couple arguing on the sidewalk." Even though they saw a woman hitting her male partner "pretty hard," the participant did not call 911 service. 'But if it was the other way around, I would have," they said.

In addition to the decision to call 911 service generally being more complex than following a simple rule of thumb, participants described many ambiguities that affected their decision-making. One such ambiguity was definitional: Participants in many cases were uncertain about whether a specific situation should be interpreted as a genuine emergency. In one focus group session, for instance, a participant described an ambiguous 911 service situation: "I was driving behind a car that was all over the road last week. I was like, do I call 911?" Many of these ambiguous situations seemed to involve circumstances of threat, or a strong possibility of physical harm. A participant in another focus group session stated there were many circumstances in their life in which it was ambiguous whether to call 911 service: "Cause I know, I myself have been in some really scary, threatening situations, but I didn't know if that was a situation that warranted a 911 call." Rather than enabling action, these 911 service gray areas contributed to a paralysis felt by some participants.

Subtheme 2: Using shortcuts

Without a thorough knowledge of the public safety system participants employed shortcuts to help them make decisions. These shortcuts included using 911 service because it is easier to remember than other possible options. As one focus group member said: "You know, in an emergency, because you don't have the police's phone number, uh, 911 is the only one you could go to."

Theme 2: Disconnect from 911

Disconnect from 911 expresses an attitude about 911 service held by participants. This theme reflected a negative evaluation, a disconnect between community members and the system that exists to serve them. The data indicated the theme when participants described how the 911 system functions with themselves in opposition to it or in terms of not understanding how it works.

Subtheme 1: 911 does not understand our culture

A crucial component of the analysis's second major theme can be labeled as cultural disconnect between 911 systems and diverse communities. Illustrating this disconnect, many participants voiced a belief that emergency responders either did not understand or were in opposition to certain cultural practices and beliefs in their communities. For instance, members of two communities believed events involving "discipline" of children would be wrongly judged by responders who did not share the same cultural background. As one participant stated, "There are some things we do [which] are totally different from US ones. For example, a lot of us are afraid the police may come and take away their kids while their parents are trying to discipline them." They later said, "For us that may just be disciplining their children but to an American that might be child abuse." More generally, many participants desired that the system show more understanding of those who are culturally diverse, with many calls for emergency responders to receive cultural training. On this point, a member from another community talked about the importance of having "cultural sensitivity" in community interactions: "It's not like you have to know everything about every culture. But you have to know how to be able to speak to somebody where there is a meeting of the minds."

Subtheme 2: 911 service asks the wrong questions

The attitude of disconnect from 911 service was also indicated in expectations concerning 911 service. When talking about experiences with 911 service, some participants believed that the questions posed to them during 911 calls were of questionable importance or relevance. Frustration emerged when participants recalled experiences with 911 service in which emergency dispatchers asked them questions concerning information they perceived not directly related to the immediate danger or problem. A community member, for instance, recalled a domestic violence incident in which they called 911 service. "And they were asking me was I safe, was I up there with them?" they said. "I was like, no. I hear it's upstairs. And they were asking my full name, my phone number, my address, all this stuff. And I was like could you get this girl some help? It's frustrating."

Subtheme 3: Don't know about 911 service

Participant responses reflected a lack of understanding of how the system operates, which revealed another disconnect between the communities and 911 service. For example, participants often conflated calling 911 service with calling local police even though these two institutions are very distinct. Possibly thinking of the outsourcing that occurs in corporate call centers, some participants believed that emergency dispatchers answering their calls could be in other countries. One participant considered this possibility of emergency services outsourced to countries outside the United States: "You hope they are in the same country as you are. You never know these days. You call someone, and they could be answering from a long way away. But you hope they are English-speaking, or at least are going to understand you. These are all hopes in what we are hopeful for, but… knowledge of? No."

Theme 3: Using 911 service is risky

Another key attitude identified by researchers was that using 911 service posed a risk to the community members. In other words, many participants believed that using 911 service exposed them to potential harms. It is possible that members from more affluent and less diverse communities would not see the same risks as the participants in this study.

Subtheme 1: Risking unfair treatment

Community members associated the use of 911 service with the possibility of dignity violation: wrongful or biased treatment based on factors like race or immigrant status. A commonly stated risk was being wrongfully blamed in emergency situations that have a police response (and therefore being subject to arrest or violence). A community member in one focus group described a situation when an acquaintance found a child on the street, and this person was not sure what

to do. "She wanted to call 911," they said. "I think she asked other people if she could call 911. And these people told her: No, because if the police arrive they will blame you for stealing the child." This risk also became a topic of discussion in another focus group. One participant in this focus group stated that "historically the police have been racist to our communities," and there is "a lack of valuation of our lives." As a result, they thought that "if they [responders] are called to a situation, they're going to think we instigated it, or that we deserve whatever is happening, that might be, you know, bad." Similarly, another community member in this focus group said "I didn't want to be traumatized by them killing my son" because their son was a person of color.

Subtheme 2: Risking financial losses

Another source of risk was the high cost of medical services. In many cases, community members worried about having to pay the cost of an ambulance ride. Concerns also related to lack of insurance. A participant in one focus group stated, for instance, "We cannot feel comfortable to call 911 because we have no insurance or money."

Subtheme 3: Risking privacy

Participants perceived the loss of privacy as a major risk, as many worried that using the 911 system also entailed loss of control over their personal information. In turn this loss of control could lead to negative consequences such as embarrassment or humiliation. For some, calls to 911 service involving the running of the home or family relations (e.g., drug abuse by family members, domestic violence) heightened these privacy concerns. In one focus group, a participant talked about this perceived risk: "I have a friend who is in Colorado right now, her son does drugs but she never calls. She never calls and I told her 'Call 9-1-1 for help,' 'No, because I don't want them to know that my son is using drugs." One participant in one other focus group associated this perception of risk with cultural factors in their community. "You know with our uh native culture throughout the years it's always been, don't tell everybody our business," they said. "And especially with the older people, don't tell everybody our business and that may make people hesitant too, to, to give information out that they're asking. Cause we're very…secretive almost [laughs]"

Subtheme 4: Risk avoidance

Perhaps unsurprisingly, many participants described behaviors undertaken to reduce these risks. Rather than paying a hefty ambulance bill, for example, some described choosing to "wait it out." Others stated they would rather receive help from members of their community than call 911 service. Risk avoidance behaviors were often described in a single focus group. A participant from that community said, for example, "sometimes people stay home sick due to lack of medical insurance. They assume the ambulance is expensive. So, I would rather stay at home until a neighbor will come and maybe give me medicine or go sell some items to get money to buy me some medicine." Talking about their spousal problems, another community member mentioned that "sometimes if your husband beats you and hurt you but when you call 911, they will take him away from you—to jail." Because of that risk, they said that "we just talk and try to handle the problem ourselves. I will not call 911 for such because they will take my husband away from me."

DISCUSSION

This study used focus group interviews to investigate barriers and attitudes to 911 emergency service among diverse communities now living in Salt Lake County. The study findings identified many significant barriers to using 911 service, including anxiety/fear, mistrust, privacy, ambiguity, financial, structural, and language. In this study, barriers were 'structural' if they were associated with deficiencies in 911 service infrastructure. One possible deficiency, for instance, is that certain communities might be located at greater distances from responding agencies than other communities, which can result in much slower response times or responders that lack familiarity with local geography. Though many of the barriers discovered in this study were similar to ones identified in previous research,[5] the structural barriers described in the focus group with participants who lived in places such as reservations were unique compared to others. For example, these communities lacked easily identifiable and accessible address locations. Future studies should further examine barriers to use of 911 service in such communities with the goal of formulating targeted interventions to help overcome any unique challenges.

As well, from these focus groups, investigators identified three main themes. Collectively, these themes express the idea that, for most of these diverse community members, the decision to use 911 service is not typically straightforward or simple. The decision can be a complex one affected by ambiguities and perceptions of potential harms. Rather than uniformly perceiving the 911 service emergency telephone number as a source of safety, community members possessed a more complicated attitude: They tended to describe using 911 service as a risk. Among the study's diverse group of participants, many believed that using 911 service could expose them to unfair treatment or discrimination from responders. Further complicating their attitude to 911 service, focus group participants, in numerous ways, indicated that they considered themselves culturally outside the 911 system.

One of the major risks that participants perceived was losing money due to the high cost of emergency medical assistance. As of 2020, in the State of Utah, the base rates for ground transport for a patient to a hospital ranged from $795 to $1535,13 and a previous study has identified financial cost as an important barrier to using 911 service among residents of primarily Latino, high-risk neighborhoods.[5] For participants in this study, who come from many diverse cultural backgrounds, financial cost motivated the "risk avoidance" of waiting for friends or family members to drive them to the hospital rather than pay a large sum of money for an ambulance ride. This type of behavior should be of concern to public health officials because patients who need urgent care might be

putting their own health at greater risk through opting for alternate transport.

Many responses from the community members were skeptical that responders would be reliable if they called or would treat them with respect—an indication of engrained mistrust and/or misunderstanding of the 911 service. Trust in 911 service can be conceptualized as a set of positive beliefs about the reliability and quality of an emergency response (i.e., "I will receive help in a timely manner;" "I will be treated with respect by responders"). The mistrust of 911 service observed in this study was somewhat unsurprising: Public trust in government systems has generally declined among Americans.[14] Research shows that levels of trust in institutions can vary by race and socioeconomic status.[15,16] Specifically, Blacks and Hispanics report lower levels of trust in physicians.[15,17] Similarly, public trust has declined in law enforcement.[16] In this study, mistrust was connected to a fear of law enforcement, and many participants showed concern that they would be wrongfully blamed for crimes if they called 911 service for an incident that involved someone else breaking the law. It is possible that an association of 911 service with law enforcement increases levels of distrust of 911 service among members of certain diverse communities. In fact, some communities perceived 911 service to be synonymous with police or law enforcement.

911 service public education campaigns have existed since the inception of the 911 emergency number, and many contemporary organizations see a need for the public to be educated on when to call, how to call, and technological advances to 911 service, among other things.[19] However, these results point to gaps in many existing educational tools. For instance, the 911 system is certainly large and complex; however, the decision to call 911 service is often painted as straightforward. Often, the advice about when to call, for example, is to only call during genuine emergencies. While this advice is valid, perhaps this message does not adequately address the ambiguities perceived by members of the public in many emergency situations. Participants in this study showed concern for wasting emergency resources and wanted to call for genuine emergencies, nonetheless they had difficulties determining whether many gray area situations were in fact worthy of calling 911 service. Considering this, educational material that gives more specific information about when to call 911 service would be beneficial. Ideally, such material would be sensitive to common ambiguities perceived by the public—such as situations where there is a threat of harm to individuals, but no actual harm done yet. As well, 911 service education that is "culturally sensitive" and addresses unique risks perceived in certain communities, possibly related to a fear of mistreatment by law enforcement discussed earlier, could have a significant positive impact.

Finally, the study results suggest a need for educating emergency dispatchers, too. Community members perceived themselves as outside the 911 system, as persons with different cultural backgrounds, practices, and beliefs than the responders being tasked to help them. In some cases, participants feared judgment from responders who they felt did not understand their culture. A common suggestion among the participants was to give these responders cultural training to help them better understand the communities they are serving. If more emergency dispatchers received such training, that could help to overcome mistrust harming relations between members of the public and various organizations involved in the 911 system. Furthermore, participants suggested that organizations employ more qualified members of their diverse communities as telecommunicators/dispatchers or paramedics. Increased inclusivity in hiring has the potential to significantly strengthen the relationships between these communities and the 911 system or law enforcement.

LIMITATIONS

Although focus groups are an often-used method, sources indicate some disadvantages.[20,21] For instance, due to the nature of sampling for focus groups, results do not necessarily have explicit generalizability. The results of this study might better reflect the particular context of Salt Lake Valley rather than a wider national context. These sources also suggest that using focus groups results might disproportionately indicate the commentary of more outspoken individuals, and the attitudes or opinions shared during these groups tend to be socially desirable. While the former problem can probably be overcome by skilled moderation, the latter issue is most likely intrinsic to the format, since participating in a focus group is in a sense a "public performance."

Even though this study looked at a wide range of diverse communities, investigators did not deliberately sample from members of disabled communities. Although some focus groups included disabled participants, disability was not part of the inclusion criteria in this study. Even though the federal government sees the importance of increasing access to 911 service for people with disabilities,[22] to the knowledge of the authors, there is little to no research into the experiences of those who must utilize telecommunication devices for the deaf, for instance. Similarly, the research study did not examine attitudes toward 911 service from less diverse populations. A comparison of these results with focus groups involving communities typically thought to have better health outcomes might provide greater insight into creating more effective interventions. Therefore, these limitations offer potential areas of further future research.

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Stress & Wellbeing in Emergency Dispatchers

Paul J. Bourgeois[1], Emily Hotz[1], Sharon Perrott[1], Taylor Bigelow[1]

1. University of New Haven, Department of Psychology, West Haven, CT 06516

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ABSTRACT

Introduction: There are currently few stress management options provided to emergency dispatchers regarding the negative emotional, physical, and mental symptoms of stress that come with the job. Similarly, there is a lack of information about how these professionals experience this role and manage to cope with the challenges associated.
Objective: The objective of this study was to describe the sources of stress, coping mechanisms, stress responses, workplace environments, support services, and employer strategies to mitigate stress experienced by emergency dispatchers.
Methods: This was a descriptive, non-experimental study using an online survey tool (SurveyMonkey) to address the research questions that framed the study. The survey included open-ended items used for the collection data on the sources of stress, sources of support, and the lived experiences of 911 emergency dispatchers. The study utilized an inductive qualitative approach, consensual qualitative research, to analyze data within a multiple case study design. Data was collected in the Spring of 2020.
Results: The results of the cross analysis on research findings identified common domains across participants, including (a) types of stressful/traumatic calls, (b) responses to stressful/traumatic calls, and (c) workplace environment/support. Conclusion: Implications address areas for ongoing discussion, including considerations and strategies to best promote mental health and wellbeing in the emergency dispatcher population. Our findings suggest further development, promotion, and utilization of employee assistance programs, peer to peer support networks, and critical incident stress management services may serve as a mechanism to enable emergency dispatchers and their organizations to better counteract job related stress and promote more positive mental health outcomes and workplace environments.

STRESS & WELLBEING IN EMERGENCY DISPATCHERS

Awareness of trauma exposure in the first responder community has heightened in recent years, prompted by public service announcements, local events, legislative actions, and formal research intended to draw attention to the duty-related trauma experienced by this population. More specifically, the public has become increasingly cognizant of the 'invisible wounds' of chronic duty-related trauma exposure and the highly stressful conditions associated with this important work. The occupational health literature is awash with studies documenting the relationship between work-related stress and a range of adverse health outcomes, primarily focused on police and firefighters. While police officers, firefighters, and emergency medical personnel are often recognized for their hard work on-scene, the role of the emergency telecommunications dispatcher is easily overlooked. Although emergency dispatchers are not typically in visual contact with the emergencies or physically present at the scene of a traumatic event, they are responsible for sending other first responders to dangerous environments and tasked with providing psychological support to civilians on the other end of the call.[1] Inherent to this duty of being the first of first responders, emergency dispatchers are challenged with maintaining the cognitive and emotional resources necessary to make precise and rapid decisions that are essential to averting potentially life-threatening outcomes.[2]

The job of an emergency dispatcher requires the strategic and complex coordination of emergency personnel under highly stressful time intensive conditions.[3] Serving as the first contact between distressed individuals and emergency responders, dispatchers work to triage incoming phone calls that can be unpredictable in volume, length, and content; collect information needed to dispatch first responders in the field; issue medical instructions to callers; and make rapid, wide-ranging decisions in a work environment over which they have no control.[2] Dispatchers are exposed to a wide-range of traumatic events, such as incidents involving distressed children, physical assault/altercations, domestic disputes, and suicides. Meischke et al. indicated that dispatchers are chronically exposed at rates that likely exceed that of other emergency first responders given the breadth of training they've received. As Trachik et al. noted, dispatchers are often cross-trained to handle law enforcement, medical, and fire emergencies.[3] Due to the nature of their work, emergency dispatchers are required to continue working and move on to the next call for service despite the distressing or nature of previous calls. Unlike their sworn counterparts, dispatchers are not able to take time to mentally process the previous calls or events, making it difficult to alleviate the stressors related to callers or radio traffic.[4]

Among the few systematic reviews specifically focused on emergency dispatchers, Golding and colleagues investigated the existing literature available related to the psychological health of emergency telecommunicators in order to identify their key stressors.[5] The researchers examined 16 articles that met inclusion criteria. Studies were conducted in a variety of countries (i.e., USA, UK, Australia, France, Sweden, Ireland) and included study publication dates ranging from 1987 to 2016. Golding et al. found that organizational and operational factors, as well as interactions with others, were the two most common overarching themes. Stressors identified included being exposed to traumatic calls, lack of control over high workload, and working in under-resourced and pressured environments. The researchers also noted lack of support from management and poor quality of supervisory relationships to be indicated as stressors among emergency dispatchers as well. Overall, Golding et al. reported that emergency dispatchers across different emergency services consistently reported their job as highly stressful, and that this stress affected their psychological health. The systematic review also highlighted a lack of longitudinal studies exploring the long-term effects on psychological health of working as an emergency dispatcher.

The empirical literature as a whole, and those focusing specifically on emergency dispatchers, have supported a connection between a number of work-related factors and poor employee health. One study conducted by Turner and colleagues[4] explored multiple indicators of work-related factors and health-related outcomes among emergency dispatchers. Specifically, the researchers evaluated work-related factors (e.g., work conditions, burnout, and work-life balance) on health-related outcomes (satisfaction with life, depression/anxiety, and physical health). Overall, Turner et al.[4] noted several work-related factors that may be particularly salient in predicting adverse mental health outcomes. Among the work-related factors, burnout was strongly associated with stress and had a significant direct effect on all health-related outcomes. In this study, burnout predicted poorer satisfaction with life, greater symptoms of depression and anxiety, and reports of poorer physical health. Notably, work-life balance was also found to be an important predictor of both stress and life satisfaction in this population. As the authors highlighted, the ability to "leave work at work" and develop meaningful hobbies and relationships outside of the work environment may be especially prophylactic for emergency dispatchers. Within the context of the 911 environment, the question remains of how to best encourage emergency dispatchers to develop better work-life balance. Ultimately, multiple studies[2, 3,4, 5] suggest that targeting stress levels by bolstering dispatchers' coping strategies, increasing access to mental health resources, and recognizing stress-based reactions may break the link between employment in a challenging work environment and employee health and satisfaction.

Current Study

To date, very few studies have focused on identifying factors that may mediate the psychological and emotional demands of emergency dispatcher work. Similarly, there is a lack of information about how emergency dispatchers experience their role and manage to cope with the psychological challenges associated. With this in mind, this study used a rigorous qualitative design to investigate the lived experiences of emergency dispatchers in order to further understand their experiences in this role and to explore the strategies that best promote mental health and wellbeing in this population. Using data gathered from a convenience sample of emergency 911 dispatchers, the researchers of the current study have formed a foundation upon which ideas for stress reduction and health intervention strategies can be developed for emergency dispatchers. Moreover, the outcomes of this study can be used to guide interventions to increase professional quality of life and develop associated coping strategies used to manage stressful work situations. Focused on the perspectives of practicing emergency dispatchers, this study was framed by the following research questions:

1. What are the sources of work stress according to emergency dispatchers lived experiences?
2. How do emergency dispatchers describe their sources of support related to their work-related stress?

METHODS

Participants

The researchers employed a descriptive, non-experimental methodology using an online survey tool (SurveyMonkey) to address the research questions that framed the study. The survey included open-ended items used for the collection of qualitative data on the sources of stress, sources of support, and the lived experiences of 911 emergency dispatchers. Data was collected in the Spring of 2020. Invitations to participate in

the survey were distributed by call center supervisors through email and were sent to full-time emergency dispatchers at four call centers in Eastern New England. Three separate email invitations were distributed to emergency dispatchers asking them to participate in the study and included a link to an online survey instrument. The survey instrument consisted of demographic information and nine open-ended questions. A total 107 surveys were successfully delivered to participants electronically, whereas the others were returned as 'undeliverable'. Of the successful transmissions, 28 participants responded to the online survey, for an overall 10.5% response rate.

Demographics

In sum, 69% of responses to the stress and wellbeing survey were received from women and 31% from men. One hundred percent of participants self-identified as White or Caucasian. In terms of age, 19% of participants were under the age of 30, 44% were between the ages of 30 and 39, 22% were between the ages of 40 and 49, 11% were between the ages of 50 and 59, and 4 % were age 60 or above. Nearly half of participants (48%) had worked as an emergency dispatcher for 12 years or longer with 44% of participants working five years or less, 7% working between 6 and 11 years, 29% working between 12 and 20 years, and 20% working 21 years or longer. Furthermore, the majority of participants (52%) worked in a suburban setting; 30% worked in rural settings, and 18% worked in urban settings. Participants represented work shifts including first shift (e.g., 7:00am-3:00pm; 37%), second shift (e.g., 3:00pm-11:00pm; 30%), third shift (e.g., 11:00pm-7:00am; 15%), day shift (e.g., 7:00am-7:00pm; 4%), and night shift (e.g., 7:00pm-7:00am; 14%). In terms of education, 48% reported holding an undergraduate degree, 37% completed some college, 11% completed only their high school degree, and 4% reported holding a graduate degree. Regarding the average number of calls for service received individually per shift (both emergency and non-emergency), 44% of participants reported receiving 26-50, 18% reported receiving 0-25, 15% reported receiving 51-75, 15% reported receiving 100+, and 7% reporting 76-100 call per shift.

Procedure

Institutional Review Board (IRB) approval was obtained prior to the distribution of the survey. The study was conducted over the Spring of 2020 through a web-based survey instrument, SurveyMonkey. Participation in the study was completely voluntary and anonymous; confidentiality was ensured, given that responses were anonymous. In the initial email and posting soliciting participants, information concerning consent, the details of the study, as well as the secure link to access the study was presented and made available to potential participants. In the initial email soliciting participation, participants were assured that completion of the survey was anonymous, and there would be no penalties for failure to complete the survey. The survey took approximately 10-15 minutes for participants to complete and consisted of nine demographic questions and nine short answer questions.

The nine short answer questions were (a) Please describe a recent situation/instance in your role as an emergency dispatcher that was particularly stressful for you; (b) What types of calls tend to produce the most stressful reactions for you?; (c) When you have experienced a particularly stressful call, is there anything you do in the moment or before the end of your shift to cope?; (d) What other ways do you deal with work-related stress?; (e) How do you recognize when stress is becoming an issue for you; (f) How would you describe your work environment or atmosphere?; (g) What services are available to you if you need support during or immediately after a shift?; (h) What services are available to you for long term support?; and (i) What could your employer do better to help you manage work-related stress?

Data Analysis

Consensual qualitative research (CQR) methodology is frequently used as a qualitative inquiry method in counseling and psychology research and recommends the use of semi-structured interviews.[6] The essential features of CQR include (a) use of open-ended interview questions and semi-structured data collection techniques, which enhance consistent data collection and provide an in-depth examination of individual differences; (b) participation of several researchers throughout the data collection and analysis processes to promote multiple viewpoints; (c) gaining consensus across researchers about the meaning of the data; (d) using a minimum of one auditor to review the work of the primary researchers and to lessen the effects of groupthink among researchers; and (e) using three distinct analytical phases through which data are organized into domains, core ideas, and cross-analyses.[7]

This study utilized a modified version of the CQR methodology developed by Hill and associates to analyze data within a multiple case study design.[7] The CQR approach to qualitative research is an inductive and iterative approach, or a bottom-up approach, to describe phenomenon and draw conclusions based on data gathered. For this study, a research team was compiled of two counselor educators with a range of expertise in stress and wellbeing and two graduate students who served as "auditors." Both graduate students were enrolled as a master's level students in a clinical mental health counseling program. Both students were trained on the auditing procedures by the lead authors. The core CQR components were adapted into an analytical strategy highlighting assimilation of data gathered through the surveys conducted across eastern New England. Data analysis using CQR entails three fundamental stages. Initially, domains (i.e. topics used to cluster or group data) are independently identified and coded by each researcher and then discussed within the group of researchers. Core ideas (i.e., summaries for the data that capture the essence of what was said in fewer words with greater clarity) are then identified within the research group and begin to form domains or codes. In the present study, all units of analysis (i.e., participant responses) were uploaded into the NVivo10 software package and used to support the coding process. Finally, a cross-analysis process is used to identify common themes across participants or groups (i.e.,

develop categories that describe common themes reflected in the core ideas within domains across cases).

Within a typical CQR process, documenting frequency across individual participant responses is typically used to attain representativeness. However, similar to the work of Anderson et al., the researchers in this study intentionally modified the CQR process by forgoing response frequency and instead established representativeness through careful independent analysis, cross-analysis within the research team, considerable team discussion, and recognition of response value through consensus process.[6] Data was revisited through team research meetings where researchers reexamined each response as a team in order to arrive at a consensus to verify emerging themes and conclusions over a 6-month period. Following the work of Anderson et al., researchers in this study implemented the use of an auditor familiar with the study but external to the consensus development process to provide input at each stage and to ensure integrity and trustworthiness of the results.[6] Once the auditors had reviewed findings and cross-checked analysis, researchers reviewed or revisited themes based on the recommendations from the auditors.

Results

The results of the cross analysis on research findings identified common domains across the 28 participants studied in relation to the primary research questions that guided this study. Each of these domains representing sources of stress, sources of support, and the lived experiences of 911 emergency dispatchers are presented and discussed below. Multiple domains were noted with participants representing varied employment settings, levels of education, calls per shift, ages, and years as emergency dispatchers. During the modified CQR process, three distinct domains emerged: (a) types of stressful/traumatic calls, (b) responses to stressful/traumatic calls, and (c) workplace environment/support.

Types of Stressful/Traumatic Calls

The first domain that emerged, Types of Stressful/Traumatic Calls represented various types of stressful/traumatic calls. Commonalities among the responses highlighted distinctive elements that contribute to calls being particularly stressful or traumatic. Multiple responses reference a sense of responsibility for the outcome of calls. This sense of responsibility is manifested in events in which dispatchers are attempting to relay information quickly and accurately, or events that involve threats to other people's lives. In such scenarios, emergency dispatchers are aware that time is of the essence for calls that involve life threatening situations. For example, one participant expressed the burden of "knowing in the back of your mind any delay or error can affect people's lives" and how this can be "extremely stressful" (Participant #24). Other participants echoed this comment and further explained that high call volumes created response time issues. One participant's (#6) response underscored this point, indicating that "while working with two other dispatchers we took calls for two non-life-threatening EMS calls, smell of burning in a structure, cardiac arrest for a young female found by a grieving husband, and a multitude of non-emergency calls all within a 20-minute time frame". Participants also described the impact of staffing issues and how this impacts response time. One participant shared an example when they "had three people on hold. Had officers at a medical call, while speaking with the caller whom personnel was being sent for. It was stressful trying to keep the other callers not feel as though they were being ignored every time the officers radioed in" (Participant #12).

Calls involving responder safety also showed to be stressful/traumatic for emergency dispatchers. For example, one participant noted, "there is no specific type of call that produces more stress for me. Most of my stress is produced by officer safety situations" (Participant #3). Another participant (#4), explained that "any incident that I feel my officers are at higher risk" produced the most stressful reactions. Types of calls that were reported to be the most stressful/traumatizing for emergency dispatchers were those that involved the safety of children. For example, one participant (#10) described a situation when a "mother was calling to report her son was in bed cold, blue and not responding to her." Participant #10 continued by stating, "talking with her she was afraid to touch him, she was hysterical, trying to calm her down and get help to her seemed like it took forever". Another participant (#25) shared an example of a call that "came in from a child who was in a bathroom hiding from an abuser". Participant #25 further explained that, "post shift I found myself replaying the events in my head and I struggled to detach myself from the call."

Responses to Stressful/Traumatic Calls

The second domain, Responses to Stressful/Traumatic Calls encompassed participant responses describing how they have addressed, either in the moment or before the end of their shift, receiving a difficult call. The most common responses involved physically removing themselves from their stations and talking with coworkers about the call. For example, one participant explained the importance of "stepping away to take some deep breaths if I am able to", and that it's incredibly helpful to "listen to music" (Participant #2). Informal discussions with co-workers was also a shared approach to managing stressful calls. As Participant #22 expressed, "talking about it helps". Other participants shared that the use of humor plays a critical role in mitigating a stressful call in the near term. One participant (#21) noted that "talking with certain co-workers" is extremely helpful and that "humor plays a part in coping with things."

Most participants of this study provided examples of the ways in which they manage their stress; however, there were also participants who reported that they do not do anything to relieve their stress or expressed that there is not enough time between calls to be able to reflect or process the call. For instance, Participant #25 explained that "most of the time there is no time to do anything to relieve the stress. During the stressful call you must be focused as not to cause delay or errors. When that call is over, it is usually right into the next call. This generally continues until the end of the shift." Staffing issues were also expressed as a concern in this domain. One

participant (#1) shared that their call center contained a quiet room intended for dispatcher use, but that "it isn't possible to use when we take stressful calls with only two people on duty." The core of participant responses in this domain emphasized the fact that many emergency dispatchers do not do anything to manage their stress related to calls, either in the moment or at the end of a shift. As one emergency dispatcher expressed when asked if there's anything they do to manage these types of call, "No – I just get aggravated with myself" (Participant #13).

Workplace Environment/Support

The third domain, Workplace Environment/Support emerged from participant responses that expressed factors associated with perceived organizational climates, cultures, and leadership styles. For example, one participant explained that, "support for management" would be extremely helpful and that "the 'uppers' forget what it's like to be on the floor and the stresses that come with it." (Participant #2). Issues of poor leadership including playing of favorites, general lack of support, little autonomy in performing their role, and perceived helplessness were expressed in the comments of participants. One dispatcher statement typified this idea, indicating that they are "always worried that something will go wrong and I'll be called into the office [of supervisor], dispatchers are always wrong, callers are always right, no matter what" (Participant #24). When asked how their employer could do a better job helping dispatchers managed work-related stress, one participant (#9) stated they should "do their job. Treat everyone the same way, and respect us. And not act like they know everything that goes on throughout a shift." Moreover, under this theme of management/supervisor support, dispatchers voiced the desire for respect, positive feedback, and also for management to listen to the feedback they are given to improve the call center work climate. Participant #3 captured this sentiment by stating, "pay attention to this department. Approve our requests for a change in scheduling and reclassify us as first responders. Have a director that pays attention to the employees and the lack of morale. Hire better people."

Staff and scheduling were also common concerns for dispatchers. The responses indicated that scheduling and staffing issues created additional stress because there are no opportunities for days off and there are not enough dispatchers on the floor at a time. For example, one dispatcher explained that they would "like to be able to take more than a few 5-minute breaks during a 12-hour shift, which in of themselves can be stressful if you're feeling you have to rush to get back in the center. I wish there was more consideration to scheduling." (Participant #5). Other dispatchers echoed this sentiment and shared that high call volumes also contributed to the inability to take breaks during shifts, and when dispatchers are able to take breaks, the duration is typically very short. Shift work also appeared to contribute to the stress experienced by emergency dispatchers. For example, Participant #6 explained that "I love my job as 911 dispatcher but do get stressed with the administration and scheduling. I work on night shift which I love but recently I have been called in to work on days and second shifts while also working nights all in the same week. The constant inconsistency with sleep is definitely a major cause of my stress".

Limitations

Although this study assists in understanding the sources of stress, coping mechanisms, stress responses, workplace environments, support services, several limitations are important to consider. Limitations of this study include sampling and researcher bias. For example, our sample consisted of a limited number of emergency dispatchers located in a specific geographical region (Northeast) of the United States. It is not expected that the beliefs and opinions of this sample are inclusive of all emergency dispatchers and dispatch organizations. Our research team followed the recommended guidelines for self-identifying bias and other processes for analyzing the data objectively, including the use of auditors to minimize the likelihood of misinterpretation of participant comments. It's possible that social desirability influences impacted our attempts to reach consensus during the coding process and domain development due to the power dynamic of graduate students serving as auditors of their professor's work. Additionally, a different research team may have drawn alternative conclusions and our backgrounds in clinical service provision may have biased our interpretations despite our best efforts. Despite these limitations, we believe our study has important implications for the emergency dispatch community.

Discussion

The current study sought to explore the lived experiences of emergency dispatchers in order to further understand their encounters in this role and to explore the strategies that best promote mental health and wellbeing in this population. This study builds on previous studies highlighting the stress-related experiences and level of support for emergency dispatchers.[2, 3, 8]

The findings of the current study suggest that emergency dispatchers endure considerable work-related stress in a multitude of areas within the profession. These areas included challenges with management, inadequate staffing, high call volumes, and interpersonal difficulties between coworkers and non-dispatcher first responders. Similar findings were illustrated by Trachik et al. when they found "half the dispatchers surveyed endorsed workload, inadequate communication between coworkers, and a general lack of appreciation as significant sources of stress." (p. 32).[3] Emergency dispatchers can benefit from better management and scheduling as expressed in the current survey findings. Subsequently, strong communication between coworkers has been shown to be a common way of handling stress in this profession.

In order to reduce this work-related stress, we suggest individual dispatchers work in tandem with their organization to prevent the incidence of burnout. Burnout is a phenomenon experienced by many in the profession and affects dispatcher's ability to empathize with callers and can greatly diminish

an individual's passion for their job.[4] Turner and colleagues expressed that burnout has a strong and direct effect on stress and health for dispatchers. Further, cynicism or emotional detachment from events often results from recurrent exposure to traumatic calls.[4] Respondents in the current study indicated experiencing a number of stressful/traumatizing calls that could contribute to burnout if left unaddressed. Emergency dispatcher can avoid burnout by taking breaks as scheduled, talking with a supervisor regularly about stress in the workplace, and scheduling time off from work. Staff shortages and the COVID-19 pandemic[12] have added challenges to the allocation of limited resources in this regard. Turner and colleagues highlighted the inevitable physical and mental burnout within this occupation, "The nature of their work does not allow for time between calls to mentally process the previous call or events".[4]

Another way to decrease emergency dispatcher stress is to identify and utilize coping skills. Traumatic calls can elicit vicarious trauma for dispatchers[13], illustrating the importance of finding outlets, including appropriate coping mechanisms and self-care routines, to help reduce levels of stress. In particular, increased access to mental health services and support groups specifically designed for emergency dispatchers would likely prove helpful in the development of these skills. Some helpful and effective coping skills identified in participants' responses included taking deep breaths, stepping away for a moment, talking to someone they love, listening to music, working out, and taking hikes/walks. Thus, the importance of identifying helpful and effective coping skills is critical. As the literature suggests, emergency dispatchers tend to desensitize from these stressful calls and neglect dealing with their emotions.[9] Marks and colleagues illustrated this finding in their study noting that, "Emergency dispatchers may engage in a cognitive avoidant coping strategy that previous research has related to adverse outcomes (p. 19)".[10] Employee assistance programs and critical incident stress management services are available to dispatchers if they need assistance after particularly difficult calls, however our data suggests dispatchers may be reluctant to use these available resources. Finding ways to decrease the negative mental health stigma around the utilization of debriefing sources is also critical in order for dispatchers to effectively utilize the necessary means of coping with the psychological challenges of emergency dispatching.

The current research suggests that stress recognition both individually and, in the workplace, may reduce stress from consuming the individual. Signs of stress include irritability, lack of focus, anxiety, low energy, lack of motivation, rising body temperature, or rapid heart rate. Recognizing personal stress manifestations illuminate the need to tend to self-care and utilize individual coping skills which, aid in prevention to avoid burnout and reduce overall workplace stress.

Peer to peer support was identified as a factor to help reduce work related stress. Several study participants touched upon the role of peer support and articulated how it can help them reduce stress. It can help to talk with a colleague who can relate to the nature of the work. By making evaluative comments, telling stories, and making jokes, call-takers developed a group sense of the types of emotions they should express/feel in certain situations.[11]

Awareness of resources is also crucial in diminishing stress in the workplace for emergency dispatchers. We identified a troubling theme throughout our study that indicates a majority of emergency dispatchers were either not aware of resources or not provided resources since their initial hiring process. For example, one participant (#23) noted "I think we have a psychologist or some services available but I've never used it and don't know the easiest way to contact someone about it." Another participant (#9) indicated that "I'm not sure what services are available. There's probably something out there, but management aren't very open about it." We recommend that supervisors address these concerns in every supervision meeting as well as distribute additional resources to staff members. For example, bulletin postings in the breakroom, email blasts and additional methods of delivery should be explored and utilized more often within this profession. Through a collaborative effort, and effective communication, it is our hope that this research will encourage and educate professionals in order to reduce stress in what has been proved to be a very stressful occupation.

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Case Report: Armed Caller Post-Dispatch Instructions

Greg Scott, Dave Warner

In the spring of 2015, a man called 911 from his home stating that several armed suspects tried to break into his house and had fired shots in his direction. The caller had returned fire with his own weapon, and the suspects left the scene. Several minutes went by before a law enforcement officer arrived.

The 911 caller, with gun in hand, stepped outside to meet the officer, who immediately saw his gun, presumed the caller was one of the suspects, and yelled at him to show his hands. But within seconds, before the homeowner could react, the officer fired his service firearm twice. While the actual suspects were later found and arrested, irreparable damage was done—the homeowner had been shot and paralyzed below the neck due to his wounds—a quadriplegic for life. Subsequently, the 911 caller and his family filed a $25 million lawsuit against both the law enforcement agency and the 911 center, claiming gross negligence, battery, assault, and violation of civil rights.[1]

One sobering truth in public safety is that some of our greatest learning experiences are often those that involve tragedy. 9/11, Katrina, countless mass shootings, and some well publicized abduction cases such as those of Denise Amber Lee and Amber Hagerman are all examples of terrible events that ultimately led to major improvements in both field operations and in the 911 center.

But for system improvements to occur in the wake of these catastrophic events, decision makers must have the courage, determination, and skill to re-evaluate their own policies, procedures, and protocols, follow the evidence—then act boldly. The International Academies of Emergency Dispatch (IAED) Police Council of Standards is a good example. Tasked with stewardship of the Police Priority Dispatch System (PPDS™), they continuously evaluate data and case evidence to find better ways to manage law enforcement calls in the 911 center.

After reviewing the above case and the available literature, the IAED Police Council of Standards discovered that this incident was not the first where an officer shot an innocent, armed citizen trying to protect himself. In recent years, several such incidents have occurred in different states,[2-5] proof of a pattern of adverse events that required a change to police 911 calltaking protocols.

Colorado attorney Qusair Mohamedbhai puts it this way, "It's fraught with peril if a homeowner is armed and protecting their family from danger and simultaneously injecting police into that situation. The homeowner is at extraordinary risk and unfortunately what may happen may be a chilling effect on people calling police for assistance."[5]

The solution—a new post-dispatch instruction (PDI) for armed callers. In 2018, the Police Council of Standards reviewed and subsequently approved a proposal for change that includes additional instructions to callers, stating "Do not approach officers with any weapons in your hands, keep your hands visible at all times and follow their commands." This change went into effect in version 6.1 of the PPDS, released to users in April, 2019.

The instruction is now used in hundreds of 911 centers for nearly all law enforcement calls involving weapons, violence, or suspects at the scene, including: home invasions, burglaries, assaults, abductions, carjackings, robberies, domestic disturbances, active assailants, and weapons incidents.

Carrie Flynn, Managing Director at Manatee County Emergency Communications Center explains how this protocol change improves police calltaking, "With the proliferation of violence in our world, more and more people are turning to firearms for personal protection. Yet when calling for emergency assistance, many are under duress and may not be thinking about the firearm safety training they may have received. As a member of the (IAED) Police Council of Standards and as a Communications Center Director, I feel it is essential to provide our calltakers with the tools and resources they need to be most effective—and that includes PDIs such as this one. This will help prevent errors and save lives."

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Research Spotlight: Chris Olola, Ph.D.

Audrey Fraizer

Dr. Chris Olola is the Director of Biomedical Informatics and Research at the Academics, Research & Communications (ARC) Department of the International Academies of Emergency Dispatch (IAED). Chris has 30 years of informatics, academic and clinical research experience, including five years as a regional clinical data coordinator for the severe malaria in African children (SMAC) network project, with the Kenya Medical Research Institute/Wellcome Trust Research Labs. He received his Ph.D in Biomedical informatics (Public Health Informatics emphasis), from the University of Utah in 2009. His doctorate research focused on the adoption of American Society for Testing and Materials Continuity of Care Record (CCR) standard -- E2369-05, to advance continuity of care in the United States healthcare community. Dr. Olola has published widely and he is an Editor-in-Chief (emeritus) of the IAED's scientific peer-reviewed journal; Annals of Emergency Dispatch & Response - AEDR **(http://www.aedrjournal.org)**, and founder member of the Kenya Health Informatics Association-KeHIA and Editor-in-Chief of KeHIA Journal.
Dr. Chris

Q AND A WITH CHRIS OLOLA, PH.D.

Q1. Tell us about how and why you got into research?

Well, my research interest started in early 90s when I joined the Ministry of Health, Kenya, as a Systems Analyst/Programmer—after completing my undergraduate degree program with a BSc in Statistics and computer science. Immediately I was deployed to help enhance the national inpatient and outpatient systems that were used to capture data from >5,000 governmental and non-governmental health facilities (hospitals, health centers and dispensaries) across the country. While on these projects, I got interested in research on how to strengthen the of continuity of care processes across the healthcare continuum. Although we implemented several interventions, our efforts were limited by the dearth of technology diffusion in the care system. However, this saw my debut in publishing—we published "Sigei C., Kimani J., Olola C.H.O. et al. Health Information Systems in Kenya. HIS report 1992-1996, MoH-Kenya; 1996."

In the mid-90s, I was fortunate to go back to graduate school to pursue further education in computer studies, after which I was re-deployed to the Kenya National HIV/AIDS Control Program (NASCOP)—to lead efforts in HIV/AIDS surveillance at 24 sentinel surveillance sites in the country. This was the time when HIV/AIDS was causing immense havoc throughout the world. This accorded me numerous opportunities to venture into HIV/AIDS surveillance research, from which we published several papers e.g., "Okeyo T.M., Baltazar G., Mutemi R., Olola C.H.O. et al. HIV/AIDS Situation in Kenya. NASCOP; 1999." The rest is history.

After my masters program (MS[IS]) from the University of Leeds, UK, I then moved to the Kenya Medical Research Institute [KEMRI]/Wellcome Trust Research Laboratories (WTRL) to help coordinate malaria research in African children with severe malaria (in 5 countries in Africa)—through the Severe Malaria in African Children (SMAC) clinical network—a US National Institutes of Health (NIH) funded project through a 5-year grant held by Michigan State University, the affiliation of the Principal Investor.

Q2. Tell us some more about your involvement in the malaria research project in Africa.

SMAC is a multi-center clinical network that is conducting malaria research in 5 countries in Africa: Kenya, Malawi, The Gambia, Ghana, and Gabon. We worked with severely ill children who were mostly comatose with malaria. The main problems were lack of access to immediate and quality care, inadequate diagnostic and data collection tools, and feeble technical capacities to meaningfully combat the ravaging malaria epidemic in Africa. The consortium involved malaria experts from the 5 countries and many others from the US, UK, and WHO. I was attached to the network's statistical core at the Harvard School of Public Health. By the time of my departure from KEMRI/WTRLs, over 50,000 patients had been enrolled in the several malaria research studies (most of which were randomized controlled trials). We published and continue to publish many original malaria research papers out of the datasets. Some of these datasets are now publicly available (upon request) at the Harvard Dataverse databank: https://dataverse.harvard.edu/dataverse/kwtrp--for other interested researchers to use. It is during my work with SMAC that I got interested in Biomedical Informatics—which saw my departing KEMRI/WTRL to pursue my PhD (Biomedical Informatics – Public Health emphasis) at the University of Utah in 2005.

Q3. How did you wind up at the International Academies of Emergency Dispatch (IAED)?

During my 2nd year (in 2006) into my PhD program at the University of Utah, my wife saw a very short job advertisement item on bioinformatics, in the classified section of the university newspaper—and she encouraged me to apply for it. I applied and eventually secured the job, as a Data Analyst.

Q4. How does your 28 years of academic and clinical research experience in health informatics relate to your current role at the IAED?

My PhD (Biomedical Informatics) at the university of Utah was on the enhancement of continuity of care (CoC) using an American Standard for Testing & Materials' (ASTM) Continuity of Care Record (CCR) Standard. Basically, informatics is the science of how to use data, information, and knowledge to improve the delivery of care—hence improve health of humans. Now, Public health informatics (my PhD emphasis) is the application of this science in the (public) populations—a domain where prehospital care (emergency dispatch) fits in.

Q5. Please describe the evolution of research at the IAED.

It was a two-person department for some years--Dr Clawson and me. When I started with the IAED in 2006, Dr Clawson was looking for someone to establish a full-fledged research division—to help move research to the next level—specifically to generate more cogent evidence to support the validation and evolution of the dispatch protocols. Before then, just a few research papers (mostly authored by Dr Clawson) had been published in peer-reviewed journals. In late 2007, we started to get part-time help from Greg Scott (who was still full-time with the Consultants/implementation team) and was still on the road a lot. Amelia Clawson & Brett Patterson helped review most of the work before we submitted to publication. We then started, in 2014/2015, to devolve research to external collaborators i.e., with agencies, universities/colleges, communities etc.

The initial start was challenging but, with Doc's wealth of prehospital care experience, I knew I was in great hands. Although, I had close to 15 years of public health research experience, emergency dispatch was a whole foreign domain to me—I had never heard of dispatch.

At the outset, we faced 2 major challenges:

(1) How do we get our research proposals reviewed and approved? We had no institutional Review (Board (IRB), sometimes known as an Ethics Board.

(2) Where do we publish our research papers? Most peer-reviewed journals did not understand our dispatch work.

One of the very first studies was on diabetes, titled "Ability of a diabetic problems protocol to predict patient severity indicators determined by on-scene EMS crews. We had to submit our research proposal to 6 IRBs in the Salt Lake region! Eventually we secured approval. Data collection was another obstacle—clinical notes were on paper and had to be manually entered into a database. Despite these challenges, from this single project we managed to publish 3 original research papers in respected peer-reviewed journals.

After that, I proposed to Dr Clawson that we register an IRB with the Department of Human Services (DHS) in 2007. So, we gathered the required content and completed the paperwork., Hence the IAED IRB was born—in 2007 and automatously operates under the chairmanship of Mr. Jerry Overton and a team of 10 other professionals.

Where to publish was the next challenge. In 2012, I proposed to Dr Clawson that we needed a registered peer-reviewed journal. I had some prior experience with this process as well. To accomplish this, we needed an ISSN (International Standard Serial Number), which is akin to the ISBN for books. We applied for it, and soon after The Annals of Emergency Dispatch & Response (AEDR) became a reality j; debut AEDR volume v1.1 was published in 2013—with me as the first Editor-in-Chief. We have had 3 editors (Chris Olola, Isabel Gardett, & Greg Scott) since then and I'm now an editor emeritus—still helping with reviews and administration of the journal.

Q6. While your background is clinical, do you also contribute to police and fire research?

My background is Public Health. So early on with the IAED, fire and police were even more foreign than medical. The thing that got me up to speed in all the 3 disciplines was the Principles of EMD book, taking the IAED certification courses, and lots of discussions with our subject matter experts (Dr Clawson, Greg Scott, and many other dispatch professionals in our organizational network). I did and still do a lot of online learning as well. The IAED subject matter experts for fire and police really helped us begin researching these disciplines. The pioneers were Eric Perry and Jay Dornseif. Then Dave Warner and Chris Knight took over after Eric left, and we've since completed multiple published works together—which are being cited by several researchers world over.

Also, the Emergency Communication Nurse System (ECNS) was another new area of research. I had no idea at the start what it was all about! With the help of Dr. Conrad Fivaz, we were able to publish several original research studies on the ECNS.

Q7. Briefly explain how the center came about and how it can be used.

The Data Center is one of the greatest assets that the Academy has! Back in 2011 we started collecting data from a few users of the ProQA™ software. But since we were using a file transfer protocol (FTP) process, data transfer into our IAED server was relatively slow and could only occur by request. We needed more data, faster, to do comprehensive multi-site studies. In early 2015, Greg Scott and I started brainstorming ways to collect data more efficiently, with less effort for both the IAED and our users. We felt there was a solution out there that could benefit both the IAED and its protocol users. One day we floated the idea to Doc (Dr. Clawson), and he liked it. He gave us approval to proceed and work out a framework for it. Bruce Tenney, Software

Developer Manager for Priority Dispatch Corp. was given the mammoth task of making it a reality. Bruce didn't let us down—he came up with an App ("fusion") that would seamlessly extract and transmit data to the Academy's server—from where we would easily access the data and use for research. By early 2018 we were receiving data from just a few agencies. The rest is history! We cannot thank the agencies enough for their continued support in sharing their ProQA™ data (medical, fire and police) via the data center service.

The data center is an asset that serves not only all our 3 organizations (PDC, IAED, PSI), and participating agencies but, the public as well—through access to several rich, useful, and sophisticated data analytics dashboards. We have a publicly accessible deidentified and aggregated benchmarking analytics reports dashboards and private agency-specific analytics reports dashboards. Joining the data center is simple—lots of useful is available at these two sites: **https://www.emergencydispatch.org/the-science/data-center** and **https://www.aedrjournal.org/analytics-dashboard-home**. We would like more agencies to come on board and partake of these beneficial analytics, as they support us to help advocate for evidence-based dispatch practice.

8. Describe a study that piqued your interest and why.

One study that stands out as having been less successful was a follow up study which was meant to be an expansion of a study we published in the STROKE journal entitled "Predictive Ability of an Emergency Medical Dispatch Stroke Diagnostic Tool in Identifying Hospital-Confirmed Strokes." The study published study was based on Salt Lake County data maintained by National EMS Information System (NEMSIS) network and the Utah Department of Health (UDoH). Although the findings were very compelling (with very high sensitivity in predicting strokes), we had wanted to replicate the study using national data. After several fruitless attempts to recruit agencies, we were quickly hit with the reality that the kind of interoperable infrastructure we had in the Salt Lake County—with NEMSIS and UDoH—did not ubiquitously exist across the nation. I guess it was a long shot! And where the infrastructure existed, we encountered prohibiting resistance with legal teams at several states—data sharing outside the state was basically prohibited, even if deidentified to expunge personal protected information. Sadly, after several applications (some even up to the State Attorney General's office), we gave up and the study never materialized.

9. Give us some tips on creating a research social network.

Learning is a continuous process. It means connected to professionals of diverse backgrounds e.g., informatics, public health, healthcare, information systems, clinical, research, emergency dispatch, et cetera. LinkedIn is one platform where I get research ideas and continued education. It has a plethora of very enlightening presentations on public health, technology, dispatch, informatics—and healthcare and research, in general.

Another platform that I find very useful is ResearchGate. It's a platform where you network with your peer scientists and researchers, share papers, ask, and answer questions, and find collaborators in your research field.

10. Finally, what is your advice to people who would like to conduct research but don't quite know where to start.

As I always say, everyone, literally everyone does research. The only issue is that some do not know that they're already doing it. A good example is everyone (at some point) encounters a problem. A problem needs a solution. And so, one must do an investigation for a solution. Research is basically the systematic application of deliberate methods to investigate a problem and potentially find a solution to it. Reach out to people already in the field for advice and mentorship. A good first step is writing a case study (usually a brief 1500 words max of a unique or interesting case you've encountered in your area of work), and/or doing a research poster and presenting at a conference. We've published several papers not only in AEDR, but in external journals as well.

Please feel very free to contact me for any advice along these lines. Our research team and will be more than delighted to hold your hands. Evidenced-based dispatch practice is core to our profession. Let's move dispatch research and profession to the next level—together!

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110 Regent Street
Salt Lake City, UT 84111
+1-801-746-5860
+1-801-359-0996
AEDRjournal@emergencydispatch.org
AEDRjournal.org
@AEDRjournal
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