

RESEARCH REPORT

SOCIAL NEEDS IN THE PREHOSPITAL SETTING (SNIPS): EMS CLINICIAN ATTITUDES TOWARD ADDRESSING PATIENT SOCIAL NEEDS

Daniel Berger, MD^{*1}, Catherine Caldwell, MD², Meghan E. Robbins, MD³, Amelia Gurley, MD⁴,
Jessica Mann, MD⁵

* Corresponding Author: Daniel.Berger@vcuhealth.org

1. Virginia Commonwealth University Health System, Richmond, VA 2. University of Kentucky College of Medicine, Lexington, KY; 3. University of Connecticut School of Medicine, Farmington, CT; 4. University of California, Riverside School of Medicine, CA; 5. Penn State College of Medicine, Hershey, PA

Recommended Citation: Berger D, Caldwell C, Robbins ME, Gurley A, Mann J. (2023). Social Needs in the Prehospital Setting (SNIPS): EMS Clinician Attitudes Toward Addressing Patient Social Needs. *International Journal of Paramedicine*. (4), 40-51. <https://doi.org/10.56068/BNJE9301>. Retrieved from <https://internationaljournalofparamedicine.com/index.php/ijop/article/view/2754>.

Keywords: social determinants of health, emergency medical services, superutilizer, superuser, social needs, EMS, emergency medical services, paramedicine, burnout

Received: April 18, 2023
Revised: August 1, 2023
Accepted: August 24, 2023
Published: October 12, 2023

Copyright © 2023 by the National EMS Management Association and the authors

Declaration of Interests: none declared

Funding: This project received internal department support from the Penn State Health Emergency Department as well as support by the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1 TR002014 and Grant UL1 TR00045. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH. Funding for gift cards was provided by the Penn State Health Department of Emergency Medicine

Acknowledgements: The authors thank Susan Boehmer for statistical support, David Locke for participant recruitment, Penn State Health Community Paramedicine Team for support, and Zhexi (Jersey) Lu for her inspiration to pursue the project.

ABSTRACT

Introduction: There has been interest in utilizing EMS to address patients' social determinants of health, which are thought to be the cause of many unnecessary transports, particularly for "super-utilizing" patients. However, existing research is limited regarding EMS clinicians' understanding of social determinants of health and attitudes toward potential interventions.

Methods: This cross-sectional study was conducted using an internet-based survey of EMS clinicians across the United States with multiple methods of recruitment. Descriptive statistics and Chi Square Tests analyzed the data.

Results: A total of 1,112 EMTs and paramedics completed the survey with 43.4% reporting familiarity with the term, "social determinants of health," and 87.7% screening positive for burnout. Greater than 60% reported willingness to use proposed interventions to address patient social needs. Those who reported familiarity with the term, "social determinants of health," were more likely to indicate willingness to utilize interventions and to believe they were responsible for addressing their patients' social needs. Burnout had no effect on clinicians' willingness to use resources.

Discussion: Respondents showed substantial interest in using the proposed resources to address patient social needs, suggesting that EMS clinicians may be receptive to expanding their scope of responsibility to include socioeconomic interventions. EMS clinicians familiar with the term "social determinants of health" were more likely to believe they were responsible for addressing patient social needs and more willing to use interventions, suggesting a potential benefit to more education on the topic. Burnout among EMS clinicians may not be a barrier to implementing such interventions.

Conclusion: Our survey suggests that EMS clinicians may be interested in helping to address their patients' social needs. EMS clinicians should be offered education on social determinants of health in their initial training and through continuing education. Partnerships with human services agencies will be important to ensure the effectiveness of prehospital interventions.

INTRODUCTION

With United States healthcare costs rising at an unsustainable rate, there has been significant interest in addressing the increas-

ing emergency department (ED) overuse. Among the 16% of patients brought into the ED by emergency medical services (EMS), up to 61% could potentially be safely treated outside of the ED (Gratton et al., 2003). Furthermore, approximately one-quarter of all ED visits were made by the same 4.5% to 8% of patients (Iovan et al., 2020).

The term “super-utilizer” is generally accepted to describe patients who accumulate a large number of ED visits or 911 activations for either low acuity or potentially preventable complaints. Colloquially known as “frequent fliers” by EMS, these patients often utilize a disproportionate amount of resources. For example, one California patient was reportedly transported by ambulance over 700 hundred times in a single year (Jones, 2019). One survey of frequent users of EMS services in Ontario found these patients suffered from higher-than-average rates of loneliness, social isolation, poverty, and food insecurity (Agarwal et al., 2019). It has been hypothesized that the use of EMS by many of these super-utilizer patients is a result of the negative impacts of social determinants of health (Agarwal et al., 2019; Hasselman, 2013; Iovan et al., 2020). For example, a patient with mobility issues and without access to a car may be forced to rely on ambulance transport to access medical services. Patients who are living without shelter, identity documents, or health insurance are often unable to obtain timely medical care and rely on the 911 system for their healthcare needs.

Social determinants of health are conditions in which a person lives and works that impact their health (Social Determinants of Health, 2023). Examples include the neighborhood in which a person lives (e.g., walkability, exposure to pollution, personal safety), economic stability (e.g., accessibility to healthy food options, ability to afford insurance/healthcare), and education access (e.g., ability to understand health-related outcomes). These concepts are largely entwined and may disproportionately affect certain populations.

Although EMT and paramedics (collectively: EMS clinicians) care for patients who are negatively impacted by their social determinants of health, little is known about EMS clinician knowledge of, or willingness to recognize and address patient social needs. A literature review performed on July 9, 2023, by searching the NIH database for articles with the keywords “EMS,” “survey,” and “social determinants of health,” found no previous studies specifically examining EMS clinicians’ attitudes toward engaging with patients’ social needs. A series of systematic qualitative interviews performed with clinicians operating within a single EMS system noted themes suggesting widespread awareness of the role social factors played in patient health and a desire to engage with reporting on social conditions in order to improve patient health (McCann-Pineo et. al., 2022). A survey of EMS clinician knowledge of domestic violence indicated that almost 60% of respondents had only “informal education” on the topic, while almost 85% desired more formal training (Mason et al., 2010). If a similar trend holds true with social determinants of health, there is a far-reaching potential for EMS clinicians to affect health outcomes by recognizing and helping to address these social needs, which may potentially reduce overutilization of the EMS system.

Current initiatives to address social needs have often been reliant on community paramedics, who are EMS clinicians who use skills within their scope of practice in non-tra-

ditional roles to connect patients with, or transport patients to, non-hospital services, and/or to provide preventative care (e.g., checking blood pressures for patients in non-emergency settings). How such community paramedics address social needs, and the extent to which these interventions are systematized, varies widely across different community EMS agencies (Choi, 2016). Some interventions that have so far been employed to address patients' social needs include using a social needs screening tool to gather data; providing literature to patients; placing referrals on patients' behalf to medical and social services; giving patients taxi/rideshare vouchers; transporting patients to an alternative destination, such as a primary care office; and/or using a nurse advice line (Allana and Pinto 2021; "American College of Emergency Physicians Board of Directors," 2015; Choi 2016; Agarwal et al., 2018).

Interventions do not necessarily translate into meaningful impact, as providing a resource to a patient does not ensure it is sufficient to address that patient's need or can ensure a long-term change in a patient's situation. Nevertheless, there is growing evidence that EMS attempts to address patients' social needs can positively impact patient health outcomes. Studies have supported expanding the scope of traditional community paramedicine, with one study showing that with as little as four additional hours of online training, community paramedics could successfully improve health outcomes of their patients (Agarwal et al., 2018). Since most community paramedicine programs rely on skills already permitted under the EMS clinician's scope of practice, courses could be offered as continuing education for responders who are not formally trained as community paramedics, without a change in laws ("American College of Emergency Physicians Board of Directors," 2015; Patterson & Skillman, 2013).

In fact, the 2012 National Consensus Conference on Community Paramedicine acknowledged that "many EMS personnel already perform these kinds of services whether formally or informally" (Patterson & Skillman, 2013). However, it is unknown if non-community EMS clinicians would view addressing patient social needs as part of their role. This study aims to capture EMS clinicians' current understanding of social determinants of health and attitudes toward potential interventions to addressing them. Secondary outcomes include identifying subgroups associated with lesser or greater willingness to address social needs.

METHODS

This cross-sectional study utilized an online survey open to EMS clinicians. This study was approved by the Pennsylvania State University Institutional Review Board. In addition to information about the respondents and their work environment, the survey also asked about willingness to utilize, and the perceived effectiveness of, various interventions to address patient social needs, including using a social needs screening tool; providing literature; placing referrals on patients' behalf; giving patients taxi or rideshare vouchers; transporting patients to an alternative destination, such as a primary care office; or using a nurse advice line. A sample of the question format is shown in Figure 1. It also included a question to assess EMS clinician familiarity with the concept of "social determinants of health" and assessed burnout via a two-question screener that was validated against the Maslach Burnout Inventory (Li-Sauerwine et al., 2020).

Select all that apply

If a SCREENING QUESTIONNAIRE were available that identified my patient's social needs that negatively affect their health, this would:

- Reduce 911 calls
- Reduce transports
- Improve patient health

If a SCREENING QUESTIONNAIRE were available that identified my patient's social needs that negatively affect their health:

- I would do this
- My coworkers would do this
- I already do this

Figure 1: Sample Question Format

An extensive recruitment campaign was undertaken, in which study team members attempted to contact the primary EMS agency in the two largest population centers and the EMS regulatory agencies in every US state and territory. Numerous additional EMS non-profit organizations and national EMS agencies were also contacted and asked to share the survey with their members. A social media campaign was conducted that entailed study team members sharing the flier on Facebook (Meta, Menlo Park, USA) and posting to EMS groups on Reddit (Advance Publications, San Francisco, USA). Articles on the study were shared with selected EMS-oriented media organizations. Respondents were given the option to enter a drawing for a \$50 Gift Card.

	Characteristic	n	Percent (%)
License	EMT	417	37.5
	Paramedic	695	62.5
Gender	Female	398	35.9
	Male	671	60.3
	Other	42	3.8
Compensation	Paid	473	42.5
	Volunteer	107	9.6
	Paid and Volunteer at least 20 hours/week of each	532	47.9
Agency Type	Transport Agency	771	69.3
	Non-Transport Agency	341	30.7
Area	Rural	195	17.5
	Urban Cluster	596	53.6
	Urban	321	28.9
Burnout	Screened Positive for Burnout	974	87.7

Table 1. Demographic Characteristics of Respondents

Study data was collected and managed using Research Electronic Data Capture (REDCap), a secure tool hosted at Pennsylvania State University. Data was analyzed using descriptive statistics and Chi Square tests.

RESULTS

A total of 1,112 EMTs and paramedics completed the survey. They averaged 36.4 years old (CI 35.8-37.1) with an average of 10.8 years in EMS (CI 10.3-11.4). Of respondents, 43.4% (n=483) were somewhat or very familiar with the term social determinants of health, whereas 56.6% (n=629) had not heard of the term prior to this survey. Complete demographic information may be found in Table 1.

Participants were asked to indicate their willingness to utilize potential interventions. Of participants, 63.5% (n=706) indicated they would utilize a questionnaire to screen

their patients for social needs. To address these needs, 66.9% (n=744) reported that they would distribute literature with resources, 64.6% (n=718) would make referrals on behalf of patients, and 62.1% (n=690) would transport their patients to medical destinations other than an emergency department. Furthermore, 64.7% (n=720) of participants would utilize rideshare or taxi vouchers for their patients and 60.8% (n=676) would utilize an advice line. Notably, 35.7% (n=397) of EMS responders identified themselves and their peers as responsible for addressing patient social needs.

DEMOGRAPHICS

Women were more likely than men to indicate willingness to distribute literature (p=.008), however, they were not more likely than men to indicate willingness to use the other proposed interventions. They were, however, more likely to report that they are currently utilizing all interventions with the exception of rideshare vouchers and referrals (p<.05).

EMS clinicians who screened positive for burnout were more likely to indicate willingness to make referrals on behalf of their patients (p<.001) but were not more likely than clinicians who did not screen positive for burnout to indicate willingness to use other resources. Clinicians who screened positive for burnout were more likely to indicate a belief that all resources except screening questionnaires and rideshare vouchers would reduce 911 calls, but not transports or improve patient health (p<.05).

Those who reported that they were familiar or very familiar with the term social determinants were more likely than those not familiar to indicate willingness to utilize all interventions except to distribute literature (p<.001). However, those who were not familiar with the term social determinants of health were more likely to report that they were already using screening questionnaires, alternative destinations, rideshare / taxi vouchers, or advice lines (p<.05). Those familiar with social determinants of health were also more likely to identify EMS as responsible for addressing patient needs (p<.001).

EMS clinicians familiar with social determinants of health were more likely to believe that all the proposed interventions would improve patient health. They were also more likely to believe that referrals (p<.001), transport to alternative destinations (p=.007), and use of an advice line (p=.003) would reduce 911 calls, as well as that rideshare vouchers would reduce transports (p<.001). Clinicians not familiar with social determinants of health were more likely to believe that a screening questionnaire would reduce transports than those who reported that they were familiar with the term (p=.04).

EMS clinicians who identified EMS as responsible for addressing patient social needs were more willing to use all of the interventions offered, with the exception of rideshare vouchers, and to believe all would improve patient health (p<.001). They also believed that all interventions, aside from screening for social needs and transporting to alternative destinations, would reduce transports (p<.05) and that use of screeners (p=.02), literature (p=.001), and referrals (p<.001) would reduce 911 calls.

DIFFERENCES BY OCCUPATION

Those who indicated that they primarily worked at a transport agency were more likely than those at non-transport agencies to indicate willingness to utilize all of the potential interventions ($p < .001$). However, those that worked at a non-transport agency were more likely to report that they currently utilize all of those interventions ($p < .001$). EMS personnel who worked for transport services were more likely to believe all of the proposed interventions, except the use of taxi or rideshare vouchers, would improve patient health ($p < .05$). However, those respondents were also more likely to believe that taxi or rideshare vouchers would reduce transports ($p < .001$).

Paramedics were more likely than EMTs to indicate willingness to utilize alternative destinations ($p = .002$) and rideshare / taxi vouchers ($p = .001$), however, they were not more likely to be willing to utilize other interventions or to report to be currently doing so. Additionally, paramedics were more likely than EMTs to believe that alternative destinations would improve patient health ($p < .05$), and somewhat more likely to believe that taxi or rideshare vouchers would reduce 911 calls ($p = .03$), and referrals would reduce the number of 911 calls ($p = .04$).

EMPLOYED VS. VOLUNTEER EMS CLINICIANS

Volunteer EMS clinicians were more likely than clinicians who did not volunteer at least twenty hours per week to believe screening for social needs would reduce transports ($p = .04$), and were less likely to report current use of an advice line ($p = .002$).

When compared with EMS clinicians who were both employed and volunteered at least 20 hours per week, volunteer EMS clinicians were more likely to indicate willingness to distribute literature ($p = .02$). Those who were both employed and volunteered were more likely to report that they currently make referrals ($p = .04$) or utilize an advice line ($p = .001$). Employed EMS clinicians who did not volunteer were more likely than those who were both employed and volunteered at least twenty hours per week to believe that screening for social needs ($p < .001$), distributing literature ($p = .02$), making referrals ($p = .0001$), or use of an advice line ($p = .02$) would reduce 911 calls. They were also more likely to report willingness to make referrals ($p = .03$) or utilize alternative destinations ($p = .03$), which they believed would reduce transports ($p = .006$).

DIFFERENCES BY AREA

When groups were analyzed by area, EMS clinicians in rural areas were more likely than those in urban cluster areas ($p = .003$) and urban areas ($p = .002$) to report that they currently screen for social needs, whereas EMS clinicians in urban cluster areas were more likely than their rural counterparts to believe screening will improve health ($p = .02$). EMS clinicians working in urban cluster areas were also more likely than those in rural areas to indicate willingness to distribute literature ($p = .04$), and more likely than their rural and urban counterparts to believe the literature would improve patient health ($p = .02$). EMS clinicians in both urban and urban cluster communities were more likely than those in rural areas to believe that literature would reduce 911 calls ($p = .02$,

$p=.02$, respectively) and reduce transports ($p=.03$, $p=.006$, respectively).

EMS clinicians in urban areas were more likely than those in rural and urban cluster areas to be willing to make referrals ($p=.006$, $p=.002$), and were more likely than those in rural areas to report that they are currently doing so ($p=.02$). Urban EMS clinicians were also more likely than their rural and urban cluster counterparts to believe referrals would reduce 911 calls ($p=.001$, $p=.002$). Rural EMS clinicians were less likely than urban and urban cluster clinicians to believe referrals would improve patient health ($p<.001$, $p<.001$).

EMS clinicians working in urban clusters were more likely than rural EMS clinicians to indicate willingness to transport to alternative destinations ($p=.02$), however, rural EMS clinicians were more likely to report that they were currently doing so ($p=.01$).

In regard to taxi or rideshare vouchers, both EMS clinicians in urban and urban cluster areas were more likely than those in rural areas to indicate willingness to utilize vouchers ($p<.001$, $p<.001$), however rural EMS clinicians were more likely to report already doing so ($p=.002$, $p=.03$). EMS clinicians working in urban clusters were also more likely than those in urban areas to report to be currently using vouchers ($p=.035$). Urban EMS clinicians were more likely than their urban cluster or rural counterparts to believe vouchers would reduce transports ($p=.002$, $p<.001$).

Urban cluster EMS clinicians were more likely than those in rural areas to report that they are already using an advice line ($p=.05$) and to believe an advice line could reduce 911 calls ($p=.002$) and improve patient health ($p=.01$).

EMS clinicians working in urban environments were more likely than those in rural communities to believe they were responsible for addressing their patients' social determinants of health ($p=.02$).

DISCUSSION

Using EMS clinicians to address patient social needs is not itself a new concept, with community paramedicine taking the lead. However, this study included only non-community paramedicine EMS clinicians, who make up the majority of the EMS profession. Therefore, this data demonstrates that an opportunity exists for EMS services to offer their non-community paramedicine clinicians resources to help them to address their patients' social needs.

Additionally, participants who reported greater familiarity with the term social determinants of health were more likely both to indicate willingness to use the interventions and to believe that the interventions would improve patient health. These participants were also more likely to identify EMS as a party responsible for addressing patient social needs. This sense of responsibility is consistent with findings from the interviews of EMS clinicians carried out by McCann-Pineo, who reported a universal belief by their study participants that "they had an ethical, moral, legal, and professional duty to serve as both witnesses to the presence of Social Risk Factors (reporting them whenever possi-

ble) and patient advocates (especially for those who are especially vulnerable because of the Social Risk Factors in their lives)” (McCann-Pineo et. al., 2022).

Although it is possible that those who were inclined to learn about social determinants of health were also more inclined to provide resources, offering additional training to EMS clinicians could further their understanding of how interventions regarding their patients’ situations can improve their patients’ health. Since EMS personnel are familiar with the community they serve and are often the only healthcare providers to see a patient in their homes, they are uniquely suited to recognize patient social needs and help address them, if properly trained.

EMS clinicians who screened positive for burnout were not less likely than others to indicate willingness to utilize most proposed interventions, suggesting that clinician burnout may not be a barrier to utilizing social needs interventions. In fact, it is possible that providing resources to EMS clinicians to address social needs may actually reduce burnout. One of the commonly cited factors leading to burnout, including among EMS clinicians specifically, is helplessness, or a perceived inability to address patients’ needs (Grigsby, 1988). Studies of primary care providers whose practices had more resources to address patient social needs reported higher job satisfaction (Pantell et al., 2019), higher levels of professional efficacy (Olayiwola et al., 2018), and lower rates of burnout (De Marchis et al., 2019; Kung et al., 2019; Olayiwola et al., 2018). If these findings are applicable to EMS, providing EMS personnel additional training and resources to address social needs also has the potential to help combat EMS clinician burnout rather than exacerbating it. This is especially important given evidence that burnout may be a factor leading to increased EMS personnel turnover and staff shortages (Beldon, 2022).

When analyzing EMS clinicians by gender, more women than men in EMS reported currently using most social needs interventions. It is unclear what implication this would have on implementation of programs to provide more training and resources on addressing social determinants of health. These findings may be because females compose a larger percentage of volunteer EMS positions than paid EMS positions, or that there may be a gender difference in a sense of altruism or responsibility to their community (Cash et al., 2021). Regardless of cause, there is an opportunity to capitalize on the nearly two-thirds of EMS clinicians who reported willingness to start using these social needs interventions, of which there was no difference between men and women.

Level of EMS clinician training and the type of agency (i.e., transport or non-transport) both had notable effects on willingness to use, current use, and belief in the effectiveness of social needs interventions. Compared to EMTs, paramedics were more willing to utilize certain interventions, particularly rideshare/ taxi vouchers, and transport to alternative destinations. In select cases, paramedics also demonstrated greater optimism for interventions to improve patient health or reduce 911 calls. Non-transport agencies were significantly more likely to already be using all of the social needs interventions. This points to contrasting perspectives, possibly due to differences in training, job responsibilities, scope of practice, and types of reimbursed care. While more research is needed to better understand these discrepancies, this data may help to inform potential interventions being considered by EMS services. Social determinants of health and relevant interventions could be an area of continuing education for EMTs, and transport

agencies could initiate social needs intervention programs, learning from existing efforts by non-transport agencies.

Although urban and urban cluster EMS clinicians exhibited willingness to perform social needs interventions, such as making referrals to resources or transporting to alternative destinations, rural EMS clinicians appear to be more active in the current use of interventions to address social needs compared to urban or urban cluster clinicians. For example, rural EMS clinicians were the most likely to already make referrals to social needs resources, transport patients to alternative destinations, and utilize taxi or ride-share vouchers.

The reported current use of interventions could result from many different factors. For example, rural services with longer transport distances may have more systems in place to reduce unnecessary transports and keep units in service. Additionally, the longer transport time may allow EMS clinicians more opportunities to perform interventions than an urban community with a local emergency department.

While rural EMS clinicians are more active in using social needs interventions, urban and urban cluster EMS clinicians were actually more likely to believe that they are responsible for addressing their patients' social determinants of health. These findings may be related to the similar finding that EMS clinicians working in urban environments were also more likely to believe some interventions would have positive effects, such as improved health of patients or reduced 911 calls. Qualitative studies could be utilized to further investigate this relationship between EMS clinician location, their willingness to address patient social needs, and their perceived responsibility in doing so.

Differences among volunteers and employees was another characteristic of EMS clinicians that raised questions. The results regarding current use of, willingness to use, and belief in the effectiveness of all social needs interventions was heterogeneous in nature when comparing EMS clinicians of various employment statuses. It could be speculated that the motives underlying volunteering, or the difference in experience between paid employees and volunteers, might influence EMS clinicians' perspectives surrounding social determinants of health; however, no clear trend emerged.

It is also important to note that this study assessed attitudes of EMS clinicians toward using interventions to address patient social needs and beliefs regarding their efficacy. It is possible that although groups of providers may believe an intervention may be effective at reducing EMS utilization or improving patient health, there is no certainty that their belief will align with reality. Although EMS clinicians have a unique knowledge of patients' living environments, they are unlikely to be able to address patient social needs alone. EMS clinicians must instead rely on care partners to address the needs identified with screeners and follow through on referrals made on behalf of patients. Thus, while EMS has the potential to improve access to resources, limitations of the human services network available in a patient's community may limit the benefit of any EMS intervention in some situations. Partnerships with human services agencies will be imperative to ensure the maximum effectiveness of any prehospital interventions.

Strengths of this study include a large sample size and respondents from across the United States with differences in certification, practice environment, and demographics. However, there are many limitations to this study, the most significant stemming from the fragmented nature of EMS. Researchers attempted to contact each state EMS agency individually and found that while some state EMS offices shared study information with all their certified personnel, most were unwilling to assist with, or did not respond to, inquiries from researchers. This pattern was consistent with private agencies, many of whom did not respond to inquiries or reported that they were concerned with burdening their employees by sharing study information with them. Although researchers shared the survey via multiple methods, it is likely the survey had limited and unequal exposure nationally.

Although some questions, such as those used to screen for burnout were validated, the remainder of the questions were written by study authors, as validated questions could not be identified. Future studies could consider the use of previously validated questions from other healthcare professions, should those questions exist.

These unvalidated questions included provider familiarity with the term “social determinants of health,” which was chosen to assess whether an EMS clinician had more formal knowledge than simply recognizing a relationship between environment and social risks. As providing the definition could have biased the survey responses, this study did not confirm the accuracy of EMS clinician perception of social determinants of health, so it is theoretically possible that an EMS clinician could have reported familiarity without truly understanding the term.

Additionally, the survey did not include Advanced EMTs (AEMTs) and lacked a selection for Washington D.C, although respondents could select “other” as an area. All responses were self-reported and certification numbers were not recorded or verified, so participants theoretically could have submitted multiple responses using different email addresses. As it was a voluntary survey, it is possible that its respondents may have held a stronger view on the issue and biased the responses.

CONCLUSION

This study provides important insight into the viability of non-community paramedic-trained EMS personnel in helping to reduce 911 calls and transports from super-utilizer patients through addressing their social needs. Currently the largest study to explore EMS attitudes toward addressing patient social needs, its findings that over 60% of respondents were willing to use the interventions proposed in this study supports the use of EMS clinicians as potential partners in addressing social determinants of health. Notably, EMS personnel who were familiar with the term “social determinants of health” were more likely to believe they were responsible for addressing patient social needs and willing to use interventions. Additionally, EMS clinician burnout was not found to significantly impact willingness to use these resources. As such, more education on social determinants should be offered to EMS clinicians both in their initial training and through continuing education. Furthermore, EMS services should consider offering resources to their EMS clinicians to help address their patients’ social needs.

REFERENCES

- Allana, A., & Pinto, A. D. (2021). Paramedics Have Untapped Potential to Address Social Determinants of Health in Canada. *Healthcare policy = Politiques de sante*, 16(3), 67–75. <https://doi.org/10.12927/hcpol.2021.26432>
- Agarwal, G., Angeles, R., Pirrie, M., McLeod, B., Marzanek, F., Parascandalo, J., & Thabane, L. (2018). Evaluation of a Community Paramedicine Health Promotion and Lifestyle Risk Assessment Program for Older Adults who Live in Social Housing: A Cluster Randomized Trial. *Canadian Medical Association Journal*, 190(21), E638–E647. <https://doi.org/10.1503/cmaj.170740>
- Agarwal, G., Lee, J., McLeod, B., Mahmuda, S., Howard, M., Cockrell, K., & Angeles, R. Social factors in frequent callers: a description of isolation, poverty and quality of life in those calling emergency medical services frequently. *BMC Public Health* 19, 684 (2019). <https://doi.org/10.1186/s12889-019-6964-1>
- Beldon, R., Carside, J. (2022). Burnout in Frontline Ambulance Staff. *Journal of Paramedic Practice*, 14(1). <https://doi.org/10.12968/jpar.2022.14.1.6>
- Cash, R. E., Rivard, M. K., Chrzan, K., Mercer, C. B., Camargo, C. A., & Panchal, A. R. (2021). Comparison of Volunteer and Paid EMS Professionals in the United States. *Prehospital Emergency Care*, 25(2), 205–212. <https://doi.org/10.1080/10903127.2020.1752867>
- Choi, B.Y., Blumberg, C., Williams, K. (2016) Mobile Integrated Health Care and Community Paramedicine: An Emerging Emergency Medical Services Concept. *Annals of Emergency Medicine*, 67(3), 361-366. <https://doi.org/10.1016/j.annemergmed.2015.06.005>
- De Marchis, E., Knox, M., Hessler, D., Willard-Grace, R., Olayiwola, J. N., Peterson, L. E., Grumbach, K., & Gottlieb, L. M. (2019). Physician Burnout and Higher Clinic Capacity to Address Patients' Social Needs. *The Journal of the American Board of Family Medicine*, 32(1), 69–78. <https://doi.org/10.3122/jabfm.2019.01.180104>
- Gratton, M. C., Ellison, S. R., Hunt, J., & Ma, O. J. (2003). Prospective determination of medical necessity for ambulance transport by paramedics. *Prehospital emergency care*, 7(4), 466–469. <https://doi.org/10.1080/31270300220x>
- Grigsby, D. W., & Knew, M. A. M. (1988). Work-Stress Burnout among Paramedics. *Psychological Reports*, 63(1), 55–64. <https://doi.org/10.2466/pr0.1988.63.1.55>
- Hasselmann, D. (2013). Super-Utilizer Summit: Common Themes from Innovative Complex Care Management Programs.
- Iovan, S., Lantz, P. M., Allan, K., & Abir, M. (2020). Interventions to Decrease Use in Pre-hospital and Emergency Care Settings Among Super-Utilizers in the United States: A Systematic Review. *Medical Care Research and Review*, 77(2), 99–111. <https://doi.org/10.1177/1077558719845722>
- Jones, T. (2019, November 8). AMR Staffing Shortage Impacts Program Aimed To Reduce Frequent 911 Callers. NBC San Diego.
- Kung, A., Cheung, T., Knox, M., Willard-Grace, R., Halpern, J., Olayiwola, J. N., & Gottlieb, L. (2019). Capacity to Address Social Needs Affects Primary Care Clinician Burnout. *The Annals of Family Medicine*, 17(6), 487–494. <https://doi.org/10.1370/afm.2470>
- Li-Sauerwine, S., Rebillot, K., Melamed, M., Addo, N., & Lin, M. (2020). A 2-Question Summative Score Correlates with the Maslach Burnout Inventory. *Western Journal of*

- Emergency Medicine, 21(3). <https://doi.org/10.5811/westjem.2020.2.45139>
- Mason, R., Schwartz, B., Burgess, R., & Irwin, E. (2010). Emergency Medical Services: a resource for victims of domestic violence? *Emergency Medicine Journal*, 27(7), 561–564. <https://doi.org/10.1136/emj.2009.084129>
- McCann-Pineo, M., Gorgens, S., Cassara, M., Coffield, E., Robinson, B., McEvoy, T., & Berkowitz, J. (2022) Addressing Social Risk Factors in the Prehospital Setting: A Qualitative Analysis of EMS Clinician Knowledge and Perceptions. *American Journal of Emergency Medicine*, 59, 200-202. <https://doi.org/10.1016/j.ajem.2022.05.025>
- Medical Direction of Mobile Integrated Health Care and Community Paramedicine Programs. (2015). *Annals of Emergency Medicine*, 66(6), 692–693. <https://doi.org/10.1016/j.annemergmed.2015.08.020>
- Olayiwola, J. N., Willard-Grace, R., Dubé, K., Hessler, D., Shunk, R., Grumbach, K., & Gottlieb, L. (2018). Higher Perceived Clinic Capacity to Address Patients' Social Needs Associated with Lower Burnout in Primary Care Providers. *Journal of Health Care for the Poor and Underserved*, 29(1), 415–429. <https://doi.org/10.1353/hpu.2018.0028>
- Pantell, M. S., De Marchis, E., Bueno, A., & Gottlieb, L. M. (2019). Practice Capacity to Address Patients' Social Needs and Physician Satisfaction and Perceived Quality of Care. *The Annals of Family Medicine*, 17(1), 42–45. <https://doi.org/10.1370/afm.2334>
- Patterson, D. G., & Skillman, S. M. (2013). National Consensus Conference on Community Paramedicine: Summary of an Expert Meeting.
- Social Determinants of Health. (2023). World Health Organization.