

Journal of Agromedicine

ISSN: 1059-924X (Print) 1545-0813 (Online) Journal homepage: www.tandfonline.com/journals/wagr20

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To cite this article: Emery L. Harwell, Michael Z. Wright, Catherine E. LePrevost, Jamie E. Bloss & Joseph G. L. Lee (2023) An Analysis of the Availability of Health Education Materials for Migrant and Seasonal Farmworkers, Journal of Agromedicine, 28:3, 615-619, DOI: 10.1080/1059924X.2023.2169424

To link to this article: https://doi.org/10.1080/1059924X.2023.2169424

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Published online: 09 Feb 2023.

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JOURNAL OF AGROMEDICINE
2023, VOL. 28, NO. 3, 615–619
https://doi.org/10.1080/1059924X.2023.2169424

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BRIEF REPORT

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An Analysis of the Availability of Health Education Materials for Migrant and Seasonal Farmworkers

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ABSTRACT

Community health workers (CHWs) have reported a paucity of farmworker-specific education materials for use during health outreach to farmworkers. To improve our understanding of the availability of topically and culturally relevant health education materials for farmworkers, we identified 15 key health topics to examine across four major online health information services: MedlinePlus.gov, Migrant Clinicians Network, National Agricultural Safety Database, and National Center for Farmworker Health. We established inter-coder reliability and conducted coding for health education materials by topic and identified the percentage of materials specifically designed for farmworkers. The availability of materials ranged from, on the low end, accessing clinic services, having one health education material total across all four online services, to alcohol, tobacco, and other drugs, having 50 materials across the four online services. Online health information services ranged from 0.6% of the materials designed specifically for farmworkers (MedlinePlus.gov) to 42.9% (Migrant Clinicians Network). The findings from this study underscore the need to support community-based projects centering CHWs' roles as advocates and facilitators to develop educational materials for farmworker health outreach.

KEYWORDS

Community health workers; farmworkers; health education

Introduction

Migrant and seasonal farmworkers occupy a critical role in the economy and in food systems in the United States and were designated as essential workers at the beginning of the COVID-19 pandemic[1]. Their work exposes them to myriad occupational hazards: infectious diseases[2,3], pesticides and irritants[4,5], and harsh environmental conditions[6]. Farmworkers face higher risks of chronic disease like diabetes and hypertension[7]. Their geographical isolation negatively impacts mental and physical health outcomes[8]; they are often far from home yet share cramped living spaces, simultaneously amplifying feelings of loneliness and privacy loss[9,10]. With farmworker housing frequently situated in food deserts and access to transportation not a certainty, farmworkers often struggle to secure nutritious food[11,12]. These factors, in combination with limited access to health services, contribute to serious health inequities for farmworkers and their families, compared to non-agricultural workers[13].

Community health workers (CHWs), who conduct health assessments, deliver health education, provide transportation and interpretation, and coordinate appointments, are in a unique position to affect farmworkers' health[14,15]. Delivering culturally appropriate health education is a core CHW role[16], and CHWs seek materials for health education in one-on-one, group, and remote (e.g., via phone or messaging applications) settings[15]. Prior research with CHWs has clarified their need to have access to a variety of resources so that they can change materials from year to year, and CHWs have reported inadequate resources on common health topics that are relevant to farmworkers[15].

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This article has been republished with minor changes. These changes do not impact the academic content of the article.
Supplemental data for this article can be accessed online at https://doi.org/10.1080/1059924X.2023.2169424

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In 2020, the COVID-19 pandemic disrupted both CHWs' delivery of face-to-face health education to farmworkers and their attendance of in-person professional development opportunities, where they share and receive health education materials. In 2020, in particular, CHWs had to reconfigure their strategies for continuing to provide health education according to pandemic response guidelines[17]. Online resources and virtual services have gained new importance even as many face-to-face activities have resumed. To improve our understanding of the availability of topically and culturally relevant health education materials for farmworkers, we examined the availability and characteristics of health education materials in four major online health information services.

Methods

This research was conducted as part of a National Library of Medicine Health Disparities Resources Grant (G08LM013198), which included partnering with a state farmworker health program and an advisory board comprised of students from farmworker families, CHWs, health education specialists, and library/information specialists. The research protocol was reviewed and approved by the East Carolina University and Medical Center IRB (#20–002090).

Our investigation began by determining a sampling frame: which online health information services to analyze and which topics to search. The four services, MedlinePlus.gov, Migrant Clinicians Network (MCN), the National Agriculture Safety Database (NASD), and the National Center for Farmworker Health (NCFH), include general health information services and those dedicated to agricultural issues, and were selected based on a recent mapping review[7] and in consultation with rural health practitioners and the project's advisory board. Most materials are available in multiple languages in the services. We included all languages except in MedlinePlus.gov, where the same entries are consistently available in English and Spanish.

We developed a protocol that is available in an institutional repository (https://doi.org/10.15139/S3/U2AVER). We first searched the online health information services for the 15 topics and recorded results. We then recorded each educational material designed for consumers from the searches and coded them. The key variable of comparison across the sample of online health information services and health topics was whether a material (e.g., oral hygiene pamphlet found on National Agriculture Safety Database) was designed specifically for farmworkers' use. Resnicow et al.[18] outlined a framework for understanding cultural sensitivity in public health interventions, positing surface and deep structure dimensions. Surface structure interventions might match materials and messaging to the locations, food, music, and dress of a given culture, while deep structure approaches would consider the historical, environmental, and psychological forces that may impact health behavior in a population. Materials in the surface structure might include photographs of farmworkers in fields (in contrast to graphics of stereotypical concepts of farmers with straw hats) while deep structure materials might invoke prominent cultural figures like labor organizers or artists. Materials that met any standard of inclusion for this model were categorized as designed specifically for farmworkers.

We established inter-rater reliability of coding for the characteristics of materials by piloting the protocol with three independent coders, who tallied total and farmworker-specific materials using two topics: immunizations and oral health. We calculated reliability using Krippendorff's alpha[19] and achieved adequate reliability: alpha = 0.85 (95% confidence interval 0.71–0.96). Coding was carried out on the remaining data between October and December of 2020.

Results

We first examined the total number of materials found for each of the 15 health topics in the four online health information services. As shown in Table 1, the topic with the most unique health education materials, regardless of design for farmworkers, was alcohol, tobacco, and other drugs, with 50 materials. We found the fewest materials for emergency preparedness ($n = 8$), green tobacco sickness ($n = 4$), and clinic services ($n = 1$).

Applying our interpretation of the Resnicow et al.[18] approach, we found that 18% of the materials in the sample frame were designed for

Table 1. Number of health education materials for 15 topics identified in online health information services and proportion of materials coded as designed for farmworkers, October–December 2020.

	MedlinePlus		NASD		MCN		NCFH		Total	
Topic	*n*	Targeted	*n*	Targeted	*n*	Targeted	*n*	Targeted	*n*	Targeted
Alcohol, Tobacco & Other Drugs	38	0 (0%)	3	0 (0%)	3	0 (0%)	6	0 (0%)	**50**	**0 (0%)**
Clinic Services	1	0 (0%)	0	-	0	-	0	-	**1**	**0 (0%)**
Dental/Oral Care	7	0 (0%)	1	0 (0%)	3	0 (0%)	7	3 (43%)	**18**	**3 (17%)**
Diabetes	37	0 (0%)	2	0 (0%)	2	0 (0%)	4	3 (75%)	**45**	**3 (7%)**
Emergency Preparedness	2	1 (50%)	1	1 (100%)	3	3 (100%)	2	2 (100%)	**8**	**7 (88%)**
Emotional/Mental Health	12	0 (0%)	7	3 (43%)	2	0 (0%)	7	1 (14%)	**28**	**4 (14%)**
Green Tobacco Sickness	1	0 (0%)	3	0 (0%)	0	-	0	-	**4**	**0 (0%)**
Heat & Sun Safety	4	0 (0%)	17	4 (24%)	7	6 (86%)	3	1 (33%)	**31**	**11 (35%)**
HIV/AIDS/ STIs	17	0 (0%)	0	-	7	0 (0%)	4	0 (0%)	**28**	**0 (0%)**
Immunizations	12	0 (0%)	1	1 (100%)	2	0 (0%)	0	-	**15**	**1 (7%)**
Living Conditions/ Sanitation	0	-	4	1 (25%)	0	-	12	5 (42%)	**16**	**6 (38%)**
Nutrition	21	0 (0%)	1	0 (0%)	6	0 (0%)	0	-	**28**	**0 (0%)**
Pesticides	6	0 (0%)	19	2 (11%)	16	7 (44%)	1	1 (100%)	**42**	**10 (24%)**
Safety & Injury Prevention	11	0 (0%)	2	1 (50%)	4	4 (100%)	5	5 (100%)	**22**	**10 (45%)**
Sexual Harassment & Domestic Violence	3	0 (0%)	2	0 (0%)	8	7 (88%)	2	0 (0%)	**15**	**7 (47%)**
Totals	**172**	**1 (<1%)**	**63**	**13 (21%)**	**63**	**27 (43%)**	**53**	**21 (40%)**	**351**	**62 (18%)**

NASD = National Agricultural Safety Database; MCN= Migrant Clinicians Network; NCFH= National Center for Farmworker Health. Targeted indicates materials coded as being designed specifically for farmworkers.

farmworkers. Although alcohol, tobacco, and other drugs had the greatest number of total education materials, none of them were designed for farmworkers. Only 3 (7%) diabetes education materials and 10 (24%) pesticide education materials were designed for farmworkers. Although they represented few of the total health education materials, a larger proportion of emergency preparedness ($n = 7$, 88%) materials were designed for farmworkers; it was the only topic with more than 50% of its materials categorized as designed for farmworkers. Other topics with more materials designed for farmworkers were heat and sun safety (35%), living conditions and sanitation (38%), safety and injury prevention (45%), and sexual harassment and domestic violence (47%).

MedlinePlus.gov, an online information service produced by the United States National Library of Medicine, had the most health education materials overall for the 15 topics ($n = 172$), nearly equaling the combined total of the three other online health information services. However, only 1 (<1%) material found in MedlinePlus.gov was coded as designed for farmworkers. The Migrant Clinicians Network and the National Agriculture Safety Database, both of which are specific to agriculture, each included 63 total materials related to the 15 topics. Migrant Clinicians Network included 27 (43%) materials coded as being designed for farmworkers, and the National Agricultural Safety Database included 13 (21%) materials coded as being designed for farmworkers. The National Center for Farmworker Health included 53 total materials across the 15 topics, 40% of which were coded as designed for farmworkers.

Discussion

Our examination of four online health information services revealed a potential deficit of health education materials designed for farmworkers, even among online services specific to agriculture and compiled by farmworker-focused organizations. Because we received consultation from CHWs in the selection of the four online health information services and 15 health topics, we expect that the data we collected approximates the results CHWs would find when seeking health education materials for farmworkers. Fewer than one in five materials located in the four online health information services were designed for farmworkers, supporting CHWs' assertion that there is a paucity of materials relevant to farmworkers and related to common health conditions[15]. Particularly concerning are CHWs'

reports of confidence in and reliance on government websites, given the dearth of farmworker-specific resources available in the only government-sponsored health information service that we examined, MedlinePlus.gov.

Limitations of our approach include our focus on relatively few databases and on visual characteristics rather than language; we did not assess other metrics of patient educational materials such as reading level or language. Future work should expand on this study to include analyses of materials for inclusive language, tone, reading level, as well as accuracy and currency of information. Additionally, further work should detail approaches for cultural tailoring.

Given evidence that culturally tailored materials can reduce health disparities for minoritized populations[20], the findings from this study underscore the need to support targeted, community-based projects centering CHWs' roles as advocates and facilitators to develop educational materials for farmworker health outreach. Sources of federal funding will be vitally important to such projects, and we envision a role for science and health educators, public health researchers, librarians, agricultural commodity groups, Cooperative Extension agents, and land grant universities to leverage their institutional positions and expertise in support of these endeavors. We found relatively few materials specifically designed for farmworkers related to alcohol, tobacco, and other drugs; green tobacco sickness; HIV/AIDS and sexually transmitted infections; and, nutrition. Thus, these topical areas should be considered for future work. Additionally, development efforts should consider the format of educational materials; we noted a lack of educational materials that could be readily shared through social media and messaging applications (e.g., WhatsApp). To ensure that future projects adequately address the challenges identified in our research (i.e., a dearth of relevant health education materials for farmworker outreach), CHWs, who have helped elucidate and are most impacted by this paucity, should be central partners in the organization and execution of new material development efforts.

Acknowledgements

The authors thank Paula Acevedo and Abdul Zahra for assistance with establishing coding reliability.

Disclosures

C.E. LePrevost and J.G.L. Lee are unpaid members of the governing board of the NC Farmworker Health Program, Office of Rural Health, NC Department of Health and Human Services. An earlier version of this manuscript partially fulfilled the degree requirements of the ECU Honors College.

Funding

Research reported in this publication was supported by the National Library of Medicine of the National Institutes of Health under Award Number G08LM013198. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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