Advancements in Agricultural Development
Volume 4, Issue 3, 2023
agdevresearch.org

Achieving Farmworker Health Equity in Colombia: A Participatory Approach to Identifying Needs and Strategies

J. Diaz[1], L. Warner[2], L. Vargas[3], I. Taboada[4], C. Gusto[5], A. Abreu[6], K. Lawson[7], N. Beatty[8]

Abstract

Farmworkers, who are essential to the global food supply chain, are often exposed to a range of occupational hazards that can have negative impacts on their health. Hazards include exposure to pesticides, long working hours, and physical strain, among others. Unfortunately, farmworkers, particularly those in low- and middle-income countries, often lack access to basic healthcare services and face numerous health inequities. Colombia is no exception. The country's agricultural sector is an important part of its economy, but farmworkers in Colombia face significant health challenges. Many work long hours in difficult conditions and lack access to basic healthcare services. To address such challenges, there is a need for greater awareness and action targeting global farmworker health inequities, specifically in Colombia. The study's purpose was to reach consensus among community health workers who serve farmworkers in Colombia on the most pervasive barriers to healthcare access and quality of care, as well as on effective strategies linked to those barriers. Using the Delphi technique, seven barriers and five strategies achieved consensus. The results provide insights for key stakeholders such as extension educators to consider in the development of policy and practice intended to overcome relevant barriers and advance health equity among farmworkers.

Article History

Received: May 2, 2023
Accepted: August 21, 2023
Published: September 12, 2023

Keywords

Delphi technique; health care access; quality of health care; community-based participatory action research; health disparities

1. John Diaz, Associate Professor and Extension Specialist, University of Florida, 1200 N. Park Rd, Plant City, FL 33563, john.diaz@ufl.edu, https://orcid.org/0000-0002-2787-8759
2. Laura Warner, Associate Professor and Extension Specialist, University of Florida, 407 Rolfs Hall, Gainesville, FL 32611, lsanagorski@ufl.edu, https://orcid.org/0000-0003-2784-6666
3. Lara Vargas, Student, University of Florida, 2708 SW Archer Rd, Gainesville, FL 32608, lvargasalvarez@ufl.edu, https://orcid.org/0009-0004-5502-1842
4. Isabel Taboada, Student, University of Florida, 2708 SW Archer Rd, Gainesville, FL 32608, isabeltaboada@ufl.edu, https://orcid.org/009-0008-2554-3163
5. Cody Gusto, Post-doctoral Scholar, University of Florida, 1200 N. Park Rd, Plant City, FL 33563, cgusto@ufl.edu, https://orcid.org/0000-0003-0008-0533
6. Adriana Abreu, Student, University of Florida, 2708 SW Archer Rd, Gainesville, FL 32608, adriana.abreu@surgery.ufl.edu, https://orcid.org/0009-0009-8258-1032
7. Kati Lawson, County Extension Director and 4-H Agent, University of Florida, 4509 George Blvd Sebring, FL 33875, kmcwaters@ufl.edu, https://orcid.org/0000-0001-6271-8120
8. Norman Beatty, Assistant Professor, University of Florida, 1600 SW Archer Road, D2-39 - Gainesville, FL 32608, norman.beatty@medicine.ufl.edu, https://orcid.org/0000-0002-3032-5741

Introduction and Problem Statement

Farmworkers represent an especially vulnerable population that often experience considerable health inequities due to poor working conditions, low wages, and limited access to healthcare (Arcury et al., 2018; Arcury et al., 2019; Castillo et al.., 2021; El Khayat et al.., 2022; Molina-Guzmán & Ríos-Osorio, 2020). These inequities are particularly prevalent among farmworkers in Latin America (El Khayat et al.., 2022; López & Valdés, 2000; Mejía-Mejía et al.., 2007). Colombia specifically represents a troubling case as it has a high percentage of rural populations engaged in agriculture, which makes the issue of farmworker health a major public health concern (Lopez & Valdez, 2000; Mejia-Mejia et al., 2007; Ministerio de Salud y Protección Social, 2021). Farmworkers in Colombia often experience limited access to healthcare due to their remote locations, geographic isolation, lack of transportation, limited financial resources, lack of education and knowledge about health risks and preventive measures, discrimination, language barriers, and economic disadvantage (Castillo et al., 2021; Lopez & Valdez, 2000; Mejia-Mejia et al., 2007; Ministerio de Salud y Protección Social, 2021).

Efforts have been made to address the critical issue of health inequities among farmworkers in Antioquia, the sixth largest department of Colombia, such as the provision of free healthcare services and the development of educational campaigns to raise awareness about health risks and preventive measures (Ministerio de Salud y Protección Social, 2021; Quartucci, 2022). Unfortunately, farmworkers in Antioquia also have limited access to these health education and prevention programs that can help improve their health outcomes. There is an opportunity for extension educators in Colombia to assist in overcoming these challenges by creating community-based approaches to identifying farmworker health needs and culturally responsive strategies (Burton et al., 2021).

Theoretical and Conceptual Framework

The Cooperative Extension Health Equity Framework (CEHEF) is a comprehensive approach to addressing health disparities in underserved communities (e.g., farmworkers; Burton et al., 2021). Health equity refers to the absence of avoidable and unfair differences in health outcomes among individuals or groups due to social, economic, and environmental factors (Office of Health Equity, 2023). CEHEF is a guide developed by the Cooperative Extension System (CES) to help extension professionals understand and address health equity issues in their work. The framework is based on a social determinants of health (SDOH) approach that acknowledges the role of social, economic, and environmental factors in shaping health outcomes.

SDOH are defined as “the conditions in which people are born, grow, live, work and age” (World Health Organization, 2021, p. 2). The National Academies of Sciences, Engineering, and Medicine (2017) cite nine SDOH that fundamentally influence health outcomes at the community level including education, income and wealth, employment, health systems and services, housing, the physical environment, transportation, the social environment, and public safety. For example, poverty is a significant social determinant of health among farmworkers,

with many living below the poverty line. According to a study by Villarejo et al. (2012), 62% of farmworkers surveyed had an annual income below the poverty line, and 72% of workers did not have health insurance. This lack of financial resources can result in limited access to healthcare services, inadequate nutrition, and inadequate housing conditions, which have significant implications for farmworker health and well-being.

By leveraging the SDOH model, the CEHEF fundamentally recognizes that addressing health disparities requires a multi-level, multi-sector approach to effectively addresses these underlying factors. The CEHEF identifies three key overarching strategies for achieving this: (a) understanding the community context, (b) identifying and addressing disparities, and (c) building capacity for change (Burton et al., 2021). The framework further advances six targeted key strategies that can be implemented at the individual, community, and policy levels. The six strategies include: (a) building community capacity, (b) promoting healthy behaviors and environments, (c) improving access to care, (d) addressing SDOH, (e) building partnerships and coalitions, and (f) using data and evaluation to guide action (Burton et al., 2021).

The CEHEF emphasizes the need for community engagement and collaboration between different stakeholders to identify and address SDOH that contribute to health disparities. This requires an understanding of the unique needs and challenges faced by underserved communities, as well as a commitment to cultural sensitivity and equity (Burton et al., 2021). One strategy for integrating and delivering a CEHEF into a community is to use a community-based participatory research (CBPR) approach. CBPR is a collaborative approach to research that involves community members as equal partners in the research process (Wallerstein et al., 2017). This approach recognizes the importance of community knowledge and expertise in identifying and addressing health disparities. It also helps to empower and engage communities in the policy development process that is important for achieving changes to policies, systems, and environments to advance farmworker health equity.

Purpose

The purpose of this study was to identify consensus on the most pervasive barriers and effective strategies to healthcare access and quality of care among Farmworkers in Antioquia, Colombia. To achieve this purpose, the following objectives guided our inquiry:

1. Determine primary barriers to health care access and quality of care for farmworkers.
2. Determine the most effective strategies to advance health care access and quality of care for farmworkers.

This research study was developed to inform collaborative efforts between government agencies and officials in Antioquia, university partners, community non-profit organizations that serve farmworkers and community leaders. The results of this study will be used to inform policies and practices that advance farmworker health equity, including insights into the role of extension education.

Methods

We utilized a modified, two-round Delphi technique in this study. A Delphi technique involves a series of iterative rounds of anonymous questionnaires or surveys with the goal of identifying consensus among expert panelists in the areas of policy, practice, or organizational decision-making in a relatively short period of time (Brady, 2015; Hasson et al., 2000). While Delphi studies can range in rounds, "the essence of good Delphi surveys is an iterative process and controlled feedback to generate consensus," with a "closing criteria in most of the Delphi studies include consensus achieved after a prefixed (usually two) rounds" (Nasa et al., 2021; p. 120). The study was launched in the fall of 2022 and completed in the spring of 2023, and all verbal and written materials were presented in Spanish.

The panel for this study included a purposive sample of 16 community health workers (i.e., promotoras) who lived and worked in the poorest areas of Antioquia, Colombia (i.e., comunas) and who serve farmworker communities. The promotoras were solicited for inclusion not only because of their familiarity with the communities of interest and their associated health care needs, but also because of their own expertise in public health and health care. In many of the cases of the panelists, this familiarity stemmed not only from living in the communities but also from working as farmworkers in these communities. Interestingly, more than half of the group not only were farmworkers but were part of a group called "Agricologas," which was a peer-to-peer learning group focused on educating and serving the agroecology communities of rural Antioquia.

The Delphi technique was adapted to include the minimum of two rounds, because starting collaborative efforts from a point of consensus was important but the authors understand that the panel members had limited availability because of rough realities of their poor home life and extensive work responsibilities in agricultural production and community health. To accommodate for the respondent reality and allow for more response time, two months were allocated for data collection for each round. Antioquia was chosen because it represents one of the most productive agricultural regions in Latin America with some of the most prevalent health inequities in Colombia. A community-based approach (Hacker, 2013) was used to select the panelists, eliciting recommendations from key community leaders and non-profits. As part of the community-based approach, an implementation workgroup that represented a subset of the panel (n = 5) was convened to guide various aspects of the process, including a post-study review and synthesis of findings.

Data Collection and Analysis

In the first round of the two-round Delphi, panellists were invited to provide their perspectives on four open-ended prompts through an online survey. The prompts asked panellists to address the most significant barriers, challenges, and obstacles to quality farmworker health care access, and strategies believed to hold the most promise for improving access to quality health care for farmworkers. Prior to data collection, we administered the survey to a group of Colombian clientele and extension educators in Florida among Colombians who provided their feedback related to survey readability and understanding. We used a group of Colombians,

specifically, so the pilot would evaluate these tenets based on Colombian Spanish dialect and cultural norms.

To analyze the open-ended responses, we used a three-step thematic analysis process (Braun & Clark, 2012). First, two of the co-authors extracted the text that related to our research questions from the respondents' full responses to each of the prompts. Next, they grouped similar text together within each of the areas of interest (i.e., barriers and strategies). Once the text was organized, the authors provided a new thematic label to the group of items that tied them all together. Upon completion, the co-authors that analyzed the data put together a peer-debrief memo and spreadsheet that explained the process and provided the outcomes to the rest of the author team and an external member to elicit feedback. Once feedback was collected, it was used to re-analyze data. This process continued until all authors agreed upon the created themes.

We utilized the second round to identify the panel's level of agreement (i.e., consensus) on the extent of the identified barrier and the effectiveness of each identified strategy. For barriers, we asked participants to rate the extent of the barrier using a 4-point scale, (*1 = Not a barrier; 2 = Somewhat a barrier; 3 = Moderate barrier; 4= Major barrier).* Following Delphi best practices, we utilized an *a priori* definition of consensus (Diamond et al., 2014) specified as 2/3 of the panel selecting "*Major barrier*." For the strategies, we asked participants to rate the effectiveness of each strategy using a five-point scale (*1 = Not effective at all; 2 = Somewhat effective; 3 = Effective; 4 = Very effective; 5 = Extremely effective).* For this scale, we utilized the *a priori* definition of consensus to be 2/3 of the panel selecting *"Extremely effective."* There was also an open-ended question at the end of each list asking panellists to input additional barriers or strategies for consideration.

We achieved a 100% (*N* = 16) response rate in round one and an 81% (*N* = 13) response rate in round two. Round two's response was reduced due to two panellists being unable to complete the survey in the given time and another panellist passing away. Even though respondents had two months to complete the round 2 survey, complexities and difficulties in their personal lives prevented their response.

Findings

Following the completion of round two, the principal investigator reviewed the results with the implementation workgroup and solicited feedback. Each workgroup member received a copy of the results and was asked to provide feedback through a short, facilitated discussion. The principal investigator used four simple prompts to promote reflection, identify any perceived omissions, pinpoint any items that needed to be adapted, and collectively plan the next steps for utilizing the data. The workgroup members all had positive perspectives related to the results and did not identify any omissions or discrepancies. They also identified a set of next steps, which included meeting with the Secretary of Health in Antioquia to discuss the results.

Open-ended responses from the first round generated 12 barriers to healthcare access, five barriers to quality of care, six strategies to advance healthcare access, and nine strategies to enhance the quality of care (see Table 1).

Table 1

Barriers and strategies themes synthesized from round 1 responses

Barriers to Health Care Access	Strategies to Improve Health Care Access
• Insufficient resources for medical emergencies • Insufficient financial resources • Lack of appropriate communication between medical professionals and patients • Lack of medical education in the communities • Lack of transportation resources for people with disabilities • Lack of trust towards medical professionals • Lack medical professionals • Lack of digital literacy • Lack of medical insurance • Limited access to professional advisors to navigate paperwork related to the healthcare system • Long distances to be traveled to receive medical attention due to lack of local centers • Transportation issues	• Create local healthcare centers with a permanent medical team • Create stable transportation to increase mobility for health purposes and in case of emergencies • Education and promotion of preemptive health • Have a team of medical specialists go to the rural areas periodically • Professional advisor for public resources • Telemedicine (virtual resources)
Barriers to Quality of Care	**Strategies to Improve Quality of Care**
• Inadequate infrastructure • Lack of appropriately trained medical professionals for the farmworker community • Limited access to medical specialists • Limited access to professionals that can help navigate healthcare system costs • Self-diagnostic and self-medication practices	• Construction of more local healthcare centers • Create a medical program that focuses on preemptive care • First aid training for community members (emergency births, minor injury treatments, etc.) • Have access to a professional advisor to help navigate the bureaucratic side of healthcare • Have healthcare professionals visit the communities so they can plan a more comprehensive medical plan • Have routine technical audits in rural medical centers • Have the adequate medical resources for emergency treatment • More access to medical specialists to reduce the wait time for appointments • Technical and economic support for the development and commercialization of healthy foods

Data analysis for round two resulted in group consensus for four barriers to health care access, three barriers to quality of care, three strategies for improving health care access, and two strategies for improving quality of care. Additionally, no items were added based on the open-

ended prompts by panelists for either barriers or strategies. The items that are bolded in the first columns of Tables 2 and 3 exhibited consensus based on our *a priori* definition of consensus. The items bolded in the second column in both tables did not achieve consensus based on our definition but did exhibit significant agreement (i.e., 2/3 moderate or principal barrier; 2/3 extremely or very effective). We believe that this agreement warrants consideration when evaluating the results of this study.

Table 2

Summary of responses for barriers to health care access and quality of care

Barrier to Access	% of panelists identified as a principal barrier	% of panelists identified as a moderate OR principal barrier
Long distances to be traveled to receive medical attention due to lack of local centers	**79.92 (10)**	100 (13)
Lack medical professionals	**79.92 (10)**	92.30 (12)
Insuficient financial resources	**69.23 (9)**	100 (13)
Lack of transportation resources for people with disabilities	**69.23 (9)**	100 (13)
Lack of medical insurance	53.85 (7)	**92.30 (12)**
Insufficient resources for medical emergencies	53.85 (7)	**84.62 (11)**
Transportation issues	53.85 (7)	**84.62 (11)**
Limited access to professional advisors to navigate paperwork related to the healthcare system	46.15 (6)	**76.92 (10)**
Lack of digital literacy	46.15 (6)	**69.23 (9)**
Lack of medical education in the communities	23.08 (3)	**92.30 (12)**
Lack of appropriate communication between medical professionals and patients	23.08 (3)	46.15 (6)
Lack of trust towards medical professionals	15.38 (2)	23.08 (3)
Barrier to Quality of Care		
Limited access to medical specialists	**84.62 (11)**	92.30 (12)
Lack of appropriately trained medical professionals for the farmworker community	**76.92 (10)**	76.92 (10)
Inadequate infrastructure	**76.92 (10)**	92.30 (12)
Autodiagnostic and automedication practices	61.54 (8)	**76.92 (10)**
Limited access to professionals that can help navigate healthcare system costs	30.77 (4)	**76.92 (10)**

Table 3

Summary of Responses for Strategies to Health Care Access and Quality of Care

Strategy to Access	% of panelists identified as an extremely effective strategy	% of panelists identified as an extremely OR very effective strategy
Create stable transportation to increase mobility for health purposes and in case of emergencies	**76.92 (10)**	92.30 (12)
Have a team of medical specialists go to the rural areas periodically	**76.92 (10)**	100 (13)
Education and promotion of preventative health	**69.23 (9)**	100 (13)
Create local healthcare centers with a permanent medical team	53.85 (7)	**100 (13)**
Telemedicine (virtual resources)	38.46 (5)	**69.23 (9)**
Professional advisor for public resources	23.08 (3)	**76.92 (10)**
Strategy to Quality of Care		
Have healthcare professionals visit the communities so they can plan a more comprehensive medical plan	**76.92 (10)**	92.31 (12)
Construction of more local healthcare centers	**76.92 (10)**	84.62 (11)
More access to medical specialists to reduce the wait time for appointments	61.54 (8)	**100 (13)**
First aid training for community members (emergency births, minor injury treatments, etc.)	61.54 (8)	**100 (13)**
Have adequate medical resources for emergency treatment	61.54 (8)	**100 (13)**
Create a medical program that focuses on preemptive care	53.85 (7)	**100 (13)**
Technical and economic support for the development and commercialization of healthy foods	53.85 (7)	**100 (13)**
Have access to a professional advisor to help navigate the bureaucratic side of healthcare	7.69 (1)	**76.92 (10)**
Have routine technical audits in rural medical centers	23.08 (3)	**84.62 (11)**

Finally, the five-member implementation workgroup vocalized agreement with the results from round two. Additionally, the workgroup identified the opportunity to use virtual resources (i.e., video conferencing) to conduct trainings and educational workshops in the areas to build the capacities of the farmworkers, their community and the community health workers alike. This implementation workgroup felt that this approach served as a meaningful intervention to connect university partners to these communities on a more regular basis to conduct community capacity efforts while policy discussions to construct additional local health centers and develop new health professionals in the area would take some time. They believed that virtual approaches to capacity development would help to alleviate issues of distance and lack of access to educational opportunities for the remote, farmworker communities.

Barriers

The panel agreed upon four barriers to healthcare access for farmworkers, including long distances to receive medical attention, lack of medical professionals in the area, insufficient financial resources, and lack of transportation resources for people with disabilities. When it comes to quality of care, the panel agreed upon three primary barriers to quality of care, including: limited access to medical specialists, lack of trained medical professionals, and inadequate infrastructure. The barriers align with previous literature and the conundrum that is rural health (Burton et al., 2021). Study results reveal the challenges in providing quality health care for rural communities and the farmworkers in Antioquia, Colombia are no different.

Strategies

The panel reached consensus on three strategies that would be extremely effective in addressing the barriers to healthcare access, including: creating a stable transportation infrastructure to increase mobility for health purposes and emergencies, a team of medical specialists that go out to rural areas, and education and promotion of preventative health. The panel also agreed upon two strategies that they viewed to be extremely effective for improving the quality of care, including: having healthcare professionals visit the communities so they can plan a more comprehensive medical plan and the construction of more local healthcare centers. Both strategies focus on bringing more medical resources into farmworker communities.

Conclusions, Discussion, and Recommendations

This study found local health centers can play a critical role in addressing health equity for farmworker communities, serving as a hub for healthcare services, outreach, and education; housing medical professionals; and providing a range of resources that can improve the health and well-being of farmworkers including access to primary care services. Local health centers can also serve as a resource for community outreach and engagement, a component which is critical to addressing the health disparities that affect farmworker communities (HHS, 2020). By partnering with community organizations and extension educators, local health centers can help identify and address the unique health needs of farmworker communities. Responses to these needs may include providing transportation to medical appointments, conducting

outreach campaigns to raise awareness about health issues, and working with local employers to improve working conditions.

The panelists identified three strategies that could address barriers to healthcare access for farmworkers; creating a stable transportation infrastructure to increase mobility for health purposes and emergencies, a team of medical specialists that go out to rural areas, and education and promotion of preventative health. Since transportation and geographic isolation are significant barriers, developing policies to advance new transportation development will help to alleviate existing inadequacies and impediments towards health equity (Ministerio de Salud y Protección Social, 2021). Providing and promoting education on preventative health was a strategy that panelists agreed could improve healthcare access, which aligns with current approaches in Colombia (Quartucci, 2022). This avenue represents an opportunity for agricultural extensionists to partner with health extension educators and other health professionals to couple occupational health and safety training with general health screening and education.

While the health care and transportation systems continue to evolve, a focus on preventative care will reduce farmworkers' need to use either. By providing basic health services such as screenings, vaccinations, and preventive care, local health centers can improve health outcomes and reduce disparities among farmworkers by helping farmworkers manage chronic conditions, avoid illnesses, and establish overall health and well-being (HHS, 2020).

Finally, based on community-based implementation workgroup feedback, there is the opportunity to develop and utilize virtual resources to bolster the reach and impacts of community capacity development efforts as additional centers are constructed. Online training have been documented as viable and effective option for reaching rural communities and increasing their access to educational opportunities (Burton et al., 2021). This strategy would not be without its own inherent challenges, including the lack of information technology resources like those experienced in rural areas of Colombia. The digital divide between urban and rural areas is a well-known problem globally, and Colombia is no exception, where only 23% of rural households in Colombia have access to the internet, compared to 58% of urban households (OECD, 2022). So, community members, key stakeholders and extension professionals may need to advocate for policy, system and environmental change to increase rural online access.

Beyond the implementation of the identified strategies to address health inequities for farmworkers, it is important to evaluate their impacts. This task represents an additional role for extension, as they are well-equipped and frequently engaged in such efforts. These evaluation data will help to tailor the existing approaches as they are implemented and inform other CEHEF-informed extension efforts as stakeholders work toward achieving health equity.

Acknowledgements

J. Diaz - conceptualization, methodology, validation, formal analysis, investigation, writing-original draft, writing-review & editing, supervision, project administration; **L. Warner** - methodology, validation, formal analysis, writing-original draft, writing-review & editing; **L. Vargas** - methodology, validation, formal analysis, writing-original draft, writing-review & editing; **I. Taboada** - methodology, validation, formal analysis, writing-original draft, writing-review & editing; **C. Gusto** - validation, formal analysis, writing-original draft, writing-review & editing; **A. Abreu** - validation, formal analysis, writing-original draft, writing-review & editing; **K. Lawson** - formal analysis, writing-original draft, writing-review & editing; **N. Beatty** - formal analysis, writing-original draft, writing-review & editing.

References

Arcury, T. A., Arnold, T. J., Sandberg, J. C., Quandt, S. A., Talton, J. W., Malki, A., & Daniel, S. S. (2019). Latinx child farmworkers in North Carolina: Study design and participant baseline characteristics. *American Journal of Industrial Medicine*, *62*(2), 156-167. https://doi.org/10.1002/ajim.22938

Arcury, T. A., Sandberg, J. C., Talton, J. W., Laurienti, P. J., Daniel, S. S., & Quandt, S. A. (2018). Mental health among Latina farmworkers and other employed Latinas in North Carolina. *Journal of Rural Mental Health, 42*(2), 89–101. https://doi.org/10.1037/rmh0000091

Brady, S. R. (2015). Utilizing and adapting the Delphi method for use in qualitative research. *International Journal of Qualitative Methods, 14*(5). https://doi.org/10.1177/1609406915621381.

Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol. 2. Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57–71). American Psychological Association. https://doi.org/10.1037/13620-004

Burton, D., Canto, A., Coon, T., Eschbach, C., Gutter, M., Jones, M., Kennedy, L., Martin, K., Mitchell, A., O'Neal, L., Rennekamp, R., Rodgers, M., Stluka, S., Trautman, K., Yelland, E., & York, D. (2021). *Cooperative extension's national framework for health equity and well-being* [Report of the Health Innovation Task Force]. Extension Committee on Organization and Policy Health Innovation Task Force. https://www.aplu.org/wp-content/uploads/202120EquityHealth20Sum.pdf

Castillo, F., Mora, A. M., Kayser, G. L., Vanos, J., Hyland, C., Yang, A. R., & Eskenazi, B. (2021). Environmental health threats to Latino migrant farmworkers. *Annual Review of Public Health*, *42*, 257-276. https://www.annualreviews.org/doi/10.1146/annurev-publhealth-012420-105014

Diamond, I. R., Grant, R. C., Feldman, B. M., Ling, S. C., Moore, A. M., & Wales, P. W. (2014). Defining consensus: A systematic review recommends methodologic criteria for reporting of Delphi studies. *Journal of Clinical Epidemiology, 67*(4), 401-409. https://doi.org/10.1016/j.jclinepi.2013.12.002

El Khayat, M., Halwani, D. A., Hneiny, L., Alameddine, I., Haidar, M. A., & Habib, R. R. (2022). Impacts of climate change and heat stress on farmworkers' health: A scoping review. *Frontiers in Public Health*, *10*, 71. https://doi.org/10.3389/fpubh.2022.782811

Hacker, K. (2013). *Community-based participatory research*. SAGE Publications. https://doi.org/10.4135/9781452244181.

Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, *32*(4), 1008-1015. https://doi.org/10.1046/j.1365-2648.2000.t01-1-01567.x

López, R., & Valdés, A. (2000). Fighting rural poverty in Latin America: New evidence and policy. In: López, R., Valdés, A. (Eds.) *Rural poverty in Latin America* (pp. 1-31). Springer. https://doi.org/10.1057/9780333977798.

Mejía-Mejía, A., Sánchez-Gandur, A. F., & Tamayo-Ramírez, J. C. (2007). Equity in access to health-services in Antioquia, Colombia. *Revista de Salud Pública*, *9*(1), 26-38. http://www.scielo.org.co/pdf/rsap/v9n1/v9n1a05.pdf

Ministerio de Salud y Protección Social [Ministry of Health and Social Protection]. (2021). Análisis de Situación de Salud (ASIS) Colombia*,* 2021 [Health Situation Analysis (ASIS) Colombia, 2021]. https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/ED/PSP/analisis-situacion-salud-colombia-2021.pdf

Molina-Guzmán, L. P., & Ríos-Osorio, L. A. (2020). Occupational health and safety in agriculture. A systematic review*. Revista de la Facultad de Medicina*, *68*(4), 625-638. https://doi.org/10.15446/revfacmed.v68n4.76519

Nasa, P., Jain, R., & Juneja, D. (2021). Delphi methodology in healthcare research: How to decide its appropriateness. *World Journal of Methodology*, *11*(4), 116. https://doi.org/10.5662%2Fwjm.v11.i4.116

National Academies of Sciences, Engineering, and Medicine. (2017). *Communities in action: Pathways to health equity*. The National Academies Press. https://www.ncbi.nlm.nih.gov/books/NBK425848/

Office of Health Equity. (2023, April 20). *Minority health*. Centers for Disease Control and Prevention. https://www.cdc.gov/minorityhealth/index.html

OECD. (2022). *National urban policy review of Colombia*. OECD Urban Studies, OECD Publishing., https://doi.org/10.1787/9ca1caae-en

Quartucci, S. (2022, November 7). *Colombia Launches National Preventive Health Initiative.* Latina Republic. https://latinarepublic.com/2022/11/07/colombia-launches-national-preventive-health-initiative/

Villarejo, D., McCurdy, S. A., Bade, B., Samuels, S., Lighthall, D., & Williams, D. (2012). The health of California's immigrant hired farmworkers. *American Journal of Industrial Medicine*, *55*(5), 387-395. https://doi.org/10.1002/ajim.20796

Wallerstein, N., Duran, B., Oetzel, J. G., & Minkler, M. (Eds.). (2017). *Community-based participatory research for health: Advancing social and health equity* (3rd ed.). Jossey-Bass.

World Health Organization. (2021). *Health equity*. https://www.who.int/health-topics/health-equity#tab=tab_1