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Perceived Stress, Stressors, and Preferred Stress Management Strategies Among Western Agricultural Producers

Michelle Grocke-Dewey[1], Alison Brennan[1], Brenda Freeman[2], Heather Weas[1], Jessica Gutheil[2], Lorann Stallones[3], and Don McMoran[4]

[1] Department of Health and Human Development, Montana State University

[2] Department of Counseling and Educational Psychology, University of Nevada, Reno

[3] Department of Psychology, Colorado State University

[4] Department of Extension, Washington State University

Chronic stress is associated with adverse physical, emotional, and social health outcomes such as increased rates of chronic disease, anxiety, behavioral inhibition, and well-being. In the United States, farmers and ranchers experience some of the highest levels of these adverse health outcomes. This study presents data from the Western Region Agricultural Producer Stress Survey, a survey tool designed to better understand these stressors and desired mitigation techniques. A sample of 767 agricultural producers participated in a survey that gauged their perceived stress levels, sources of stress, desired stress management topics, and preferred methods of receiving information. Workload, financial worries, and lack of time presented as the top stressors. Women averaged higher levels of both perceived stress and stressor pileup than men. Interest in stress management topics also differed significantly by gender and age, with men more interested in parenting classes and support groups, and younger producers more interested in nutrition/cooking classes. The most preferred methods for receiving information were online options. Data suggest that, on average, producers across the Western region of the United States are experiencing a medium level of stress. While this is concerning, producers expressed interest in learning more about a variety of topics to help them manage their stress and improve their well-being. Better understanding of agricultural producers' preferences for stress management topics, as well as their preferred dissemination methods, is critical in terms of providing this often underserved population with appropriate mental health assistance.

Public Health Significance Statement

This study suggests that, on average, agricultural producers in the Western region of the United States are experiencing a medium level of stress, with workload, financial worries, and lack of time being the top stressors. The stress management topics that producers would like to learn more about, as well as how they would like to learn this information, vary significantly by age and gender.

Keywords: agricultural producers, rural, stress management, mental health, social determinants of health

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Correspondence concerning this article should be addressed to Michelle Grocke-Dewey, Department of Health and Human Development, Montana State University, 321 Reid Hall, Bozeman, MT 59717, United States. Email: michelle.grocke@montana.edu

While a growing body of literature points to the positive health outcomes that result as a consequence of acute, short-term bouts of stress (such as increased immunity, metabolism, postsurgical recovery, decision-making capability, and motivation; Dhabhar, 2018, 2019; McGonigal, 2016), chronic stress has long been associated with numerous adverse physical, emotional, and social health outcomes, such as increased rates of chronic disease, anxiety and depression, behavioral inhibition, and one's own sense of well-being (McEwen & Sapolsky, 2006; Schneiderman et al., 2005). In the United States, farmers and ranchers experience some of the highest levels of these adverse health outcomes, including higher than average depression, anxiety, and suicide rates (Donham & Thelin, 2016; Miller & Rudolphi, 2022; Ringgenberg et al., 2018).

While occupational stress in general has been linked to reduced work output, increased injuries, job dissatisfaction, and higher work–family conflict (Moreno Fortes et al., 2020; Yousaf et al., 2020), occupational stress in the agricultural sector often presents at higher rates than in other occupations. One reason is that although agricultural producers have control over their own work activities and ethic, they have little control over their larger work environment, including stressors and challenges such as weather, commodity prices, and international trade policies (Chengane et al., 2021). Research illustrates that our current environmental, public health, and international economic climate have, in part, heightened both the frequency and severity of various stressors faced by farmers and ranchers.

For example, environmental changes have led to both a higher frequency and intensity of hot extremes (heat waves) since 1950 (Seneviratne et al., 2021). These heat waves have become a more prominent agricultural stressor (Chengane et al., 2021), as they can impact crops, animals, and humans alike (Prasad et al., 2008; Thornton et al., 2022). The frequency and intensity of precipitation events have also likely increased at the global scale over a majority of land regions (Seneviratne et al., 2021); these rain events are often accompanied by severe economic consequences (Bissett et al., 2018). Moreover, the COVID-19 pandemic, in addition to causing stress due to illness and/or anxiety surrounding the spread of infection, has severely restricted agriculture labor mobility, thus reducing both capacity and mass production efficiency (El Khayat et al., 2022). Last, unfavorable international trade policies—such as increases on export tariffs—have yielded a variety of financial stressors largely outside of agricultural producers' control (Okolie & Ogundeji, 2022; Taheripour & Tyner, 2018).

In addition to better understanding the general nature and extent of occupational stress in agriculture (Booth & Lloyd, 2000; Hagen et al., 2021), numerous scholars have worked to better understand specific stressors that producers face such as environmental stressors (Firth et al., 2007), psychosocial demands (Lunner Kolstrup et al., 2013), and generational pressures (Kennedy et al., 2021). Daghagh Yazd et al. (2019) confirmed in their systematic review that the four most cited influences on farmers' mental health worldwide were pesticide exposure, financial difficulties, climate variability, and poor physical health (Henning-Smith et al., 2022).

Despite extant research, there are several notable gaps in the literature. First, a significant portion of the research on stress in farmers and ranchers has been conducted with international samples. Given that the political climate and agriculture policies are distinctively different in the United States, more research on stress among U.S. farmers and ranchers is needed. Additionally, no published studies were found addressing stress throughout the Western United States, as most studies are state-specific. The Western states have the highest suicide mortality rates in the nation, statistics that are often attributed to ruralism and the Western culture of independence, and easy access to lethal means (Rossen et al., 2018). Limited evidence regarding the effectiveness of varied stress interventions or prevention programs developed in other states or regions with farmers and ranchers in the Western United States suggests the need for further assessment in this area.

Third, despite a collective understanding of the causes of farmer/rancher stress, little is known about methods of addressing this stress. Research with the agricultural community on what type of stress management and mental wellness information they would be most amenable to receive is critical, as health promotion efforts are most effective when based upon findings from high-quality research studies.

The purpose of this article is threefold: (a) to better understand the current level of stress agricultural producers face in the Western region of the United States; (b) to identify agricultural producers' sources of stress; and (c) to identify

stress management topics of interest among agricultural producers, as well as preferred channels or formats for receiving this information. Furthermore, while investigating these three core issues, we sought to determine whether differences existed according to gender and age.

Method

This study presents data from the Western Region Agricultural Producer Stress Survey, a tool designed by a team of researchers from across the Western United States who have been working collaboratively on the United States Department of Agriculture-funded Western Regional Agricultural Stress Assistance Program (WRASAP). This study was part of the baseline research portion of this larger project.

Participants

Participants were a convenience sample of 767 agricultural producers across the Western region of the United States (Washington, Oregon, California, Nevada, Montana, Idaho, Utah, Colorado, Wyoming, Arizona, New Mexico, Alaska, and Hawaii) who were at least 18 years old. The sample was 49.4% male, 59.6% were married, 24.4% had a bachelor's degree, 49.7% were non-Hispanic White, the M_{age} was 42.3 years, and the mean number of years participants had been working in agriculture was 16.7. Missing data for participant demographic variables ranged from 21.3% to 28.4% (see Table 1, for additional demographic information).

In terms of the features of the agricultural producers' enterprises, the leading cash crop(s)/product(s) were livestock, cash grains, animal specialties, and field crops. For leading cash crop(s)/product(s), participants could select all that applied; the median number selected was two ($M = 1.92$). Participants' median gross annual revenue from their agricultural enterprises was \$100,000–\$499,999, and 44.8% ($n = 260$) of participants reported that a member of the household worked off of the farm/ranch (excluding participants missing data for these items).

Table 1
Participant Demographic Characteristics

Characteristic	*n*	%
Gender		
Woman/female	197	26.0
Man/male	374	49.4
Nonbinary	1	0.2
Missing	185	24.4
Marital status		
Married	451	59.6
Single	61	8.1
Divorced	21	2.8
Cohabitating	18	2.4
Widow/er	4	0.5
Missing	202	26.7
Educational attainment		
Less than high school diploma	12	1.6
High school diploma/General Educational Development	69	9.1
Trade school/associate's degree	56	7.4
Some college	167	22.1
Bachelor's degree	185	24.4
Master's degree	61	8.1
Doctoral degree/terminal degree	27	3.6
Missing	180	23.8
Race/ethnicity		
White	376	49.7
American Indian/Native American	68	9.0
Black/African American	28	3.7
Multiracial/multiethnic	24	3.2
Hispanic	16	2.1
Other	5	0.7
Missing	215	28.4

Note. Missing *n* was 22.3% for age and 21.3% for years in agriculture. Data on these variables were collected, but only categorical demographic variables are depicted in Table 1.

Measures

Demographic Information

Age. Age in years was a numeric text entry item. For comparisons, a grouping variable was created using approximate quartiles: 18–32 ($n = 139$), 33–39 ($n = 152$), 40–48 ($n = 145$), and 49 and above ($n = 152$).

Years in Agriculture. Participants were asked, "How many years have you worked in the agricultural industry?" Responses were numeric text entry.

Gender. Gender was a text entry item. Responses were recoded into three groups: women (e.g., "female," "woman," "W," "F"), men (e.g., "man," "male," "M"), and nonbinary (any identity beyond the cisgender binary).

Race/Ethnicity. Race/ethnicity was a text entry item. Responses were categorized into a single group. Specific groups represented among responses: White, Black/African American, Asian American, American Indian/Native American, multiracial/multiethnic, and Hispanic.

Educational Attainment. Participants selected one of seven ordinal options for highest level of

education: less than high school, high school diploma/General Educational Development, trade school/associate's degree, some college, bachelor's degree, master's degree, and doctoral degree/terminal degree.

Gross Annual Revenue. Participants were asked, "What was the approximate gross revenue of all products (crops and animals) from this farm/ranch in the past year?" and selected from eight ordinal options, plus an additional option, "I prefer not to disclose."

Commodities. Participants were asked, "What is the leading cash crop or product on your farm/ranch (please select all that apply)?" and were provided with a list of 12 options.

Perceived Stress

Perceived stress was measured using the 10-item Perceived Stress Scale (PSS-10), a widely used psychological instrument that examines how different situations impact perceived stress to both internal and external events (Cohen & Williamson, 1988; Cohen et al., 1983). For each item, participants indicate the frequency with which they have had an experience within the last month, on a scale of 0 = *never* to 4 = *very often*. Four items are reverse-scored before a sum score is calculated. Total scores can range from 0 to 40. The interpretation of scores is as follows: 0–13 indicates low stress, 14–26 indicates moderate stress, and 27 or higher indicates high stress. Reliability analysis indicated high internal consistency of the PSS-10 in the present study (Cronbach's $\alpha = 0.94$).

Stressors and Stressor Pileup

Participants were presented with a list of 28 specific stressors with the prompt, "Within the last year, please indicate how often the following led you to experience stress." For each stressor, respondents selected among five options: 1 = *never*, 2 = *almost never*, 3 = *sometimes*, 4 = *fairly often*, 5 = *very often*. For analysis, *never* and *almost never* were combined, and *fairly often* and *very often* were combined, resulting in three ordinal levels. A "stressor pileup" score was computed for each participant using all stressors for which a participant selected *fairly often* or *very often*. The possible range for stressor pileup was 0–28.

Stress Management Topics

Participants were presented with a list of 17 potential topics of interest, along with the prompt question, "To help you manage and/or cope with your stress, how interested would you be to learn about the following topics if the content was made available to you?" These topics were derived from the stress management literature and research on stress in agriculture. The strategies were piloted with 12 agricultural and mental health specialists, and the survey was adjusted for their expert panel feedback. Participants indicated their level of interest using an ordinal scale: 1 = *no interest*, 2 = *neutral*, 3 = *mildly interested*, 4 = *interested*, 5 = *very interested*. For analysis, *no interest* and *neutral* were combined, and *interested* and *very interested* were combined, resulting in three ordinal levels.

Dissemination Strategies

The research team developed a list of 16 potential channels/formats for receiving information based on the variety of ways current mental health education and outreach programs could be disseminated, as well as the work of Rudolphi et al. (2019). Participants were presented with these options and asked, "In thinking about the topics from the previous question that you are interested in learning about, how would you be interested in receiving this information? Select all that apply." Responses were coded as 1 = selected, 0 = not selected.

Procedure

Data collection for this project occurred from February 2021 to July 2021. Participants were recruited via each state's Cooperative Extension Network (via email listservs as well as social media outlets), through local organizations serving agricultural producers (e.g., Farm Bureau and Farm Service Agency), as well as via the United States Department of Agriculture–funded WRASAP network. The survey, administered online utilizing the Qualtrics platform, took approximately 16 min to complete. It consisted of 30 questions, including a mix of multiple-choice, matrix, Likert scale, and open-ended items. There were five categories of questions, listed in the order of appearance within the survey: perceived stress; stressors; stress management topics;

preferred formats/modes of receiving information (dissemination strategies); and sociodemographic variables. Participants who completed the survey were entered in a drawing to receive a $50 visa gift card; 10 gift cards were available per state. This research received institutional review board exempt approval from the Montana State University (IRB No.: MG020421-EX).

Statistical Analysis

We ran a variety of statistical tests to decipher whether any demographic variables were significantly related to both PSS and stressor pileup. While age, years in agriculture and gender proved to have the highest level of correlation with the aforementioned stress variables, there was also a high level of correlation between age and years in agriculture, r (583) = 0.76, $p < .001$. We therefore chose gender and age as the two demographic variables on which to focus further analysis. Independent-samples t tests were then used to determine whether PSS total score and stressor pileup differed between men and women. Two separate one-way analyses of variance with Tamhane's T2 post hoc tests were used to examine differences in PSS total score and stressor pileup among the four age groups. Chi-square tests for independence were used to determine whether gender and age were related to stress management topic preferences and preferred channels/formats for receiving information. Bonferroni corrections for multiple comparisons were applied when interpreting results of chi-square analyses.

Results

Perceived Stress

Based on PSS score, agricultural producers throughout the Western United States are experiencing, on average, a medium level of stress ($M = 18.3$, $SD = 5.6$). Women averaged a higher PSS score than men (19.4 and 17.6, respectively), $t(df = 520) = 3.33$, $p < .001$, Cohen's $d = 0.307$. PSS score also differed according to age, $F(3, 516) = 3.28$, $p = .021$, $\eta^2 = .019$. Specifically, Tamhane's T2 post hoc test indicated that the oldest age group (49+) reported significantly lower total stress levels ($M = 17.2$, $SD = 6.6$) than the youngest age group (18–32; $M = 19.4$, $SD = 4.3$).

Specific Stressors and Stressor Pileup

Workload, financial worries, and lack of time emerged as the top sources of stress for agricultural producers across the region (see Table 2, for complete list of stressors in addition to frequency of occurrence). The mean stressor pileup score was 7.98 ($SD = 5.61$), the median was 8, and observed stressor pileup scores ranged from 0 to 27. Women reported a greater stressor pileup than men ($M = 8.8$ and $M = 7.7$, respectively), $t(df = 489) = 2.08$, $p = .038$, Cohen's $d = 0.197$. Stressor pileup also differed according to age, $F(3, 505) = 4.12$, $p = .007$, $\eta^2 = .024$. Tamhane's T2 post hoc test indicated that the oldest age group (49+) reported significantly less stressor pileup ($M = 7.0$, $SD = 5.4$) than participants aged 33–39 ($M = 9.3$, $SD = 5.8$).

Preferred Stress Management Topics

As a whole, participants were most interested in learning more about the following topics to help them manage and/or cope with their stress: (a) financial; (b) problem solving; and (c) physical activity (see Supplemental Material). However, these topics of interest varied significantly by gender. Men were more interested than women in the topics of career ($\chi^2 = 8.94$, $p = .011$), parenting ($\chi^2 = 11.15$, $p = .004$), and support groups ($\chi^2 = 10.43$, $p = .005$). Using Bonferroni correction for multiple comparisons (individual test $p < .003$), the results of two chi-square analyses remain marginally significant: parenting and support groups.

Interest in learning more about specific stress management topics also varied by age group (see Supplemental Material). The topic of greatest interest for participants aged 18–32 was nutrition/cooking; among participants aged 33–39 and 40–48, it was financial; and among participants aged 49 and above, it was retirement planning. Using Bonferroni correction for multiple comparisons, the results of nine chi-square analyses remain significant: alcohol/drug cessation, career, financial, grief, mental health, parenting, relationship support, support groups, and tobacco/marijuana/vaping cessation.

Preferred Information Dissemination Strategies

Generally speaking, the most preferred options for receiving information on stress management

Table 2
Stressors by Frequency of Occurrence

Stressor	*n* (%)
Workload	316 (42.5)
Financial worries	311 (42.0)
Lack of time (no time to rest, complete tasks well, etc.)	307 (41.4)
Production costs	297 (40.0)
Work/family balance	269 (36.1)
Legislative issues related to agriculture (adapting to new regulations, etc.)	268 (36.2)
Increased labor costs	258 (34.7)
Commodity prices	253 (34.2)
COVID-19	242 (32.4)
Family succession of the farm/ranch	237 (31.9)
Livestock (disease, injury, reproductive issues)	229 (31.1)
Weed control	222 (30.0)
Technology (machinery breakdown, etc.)	216 (29.3)
International trade policies	209 (28.4)
Pests	207 (27.8)
Ability to sell products	204 (27.5)
Weather	204 (27.5)
Family	191 (26.1)
Crop/plant disease	188 (25.6)
Social isolation	161 (21.8)
Physical isolation (lack of nearby services, health care, etc.)	157 (21.1)
Grief (death of a loved one or community member)	152 (20.5)
Wildfire	147 (19.8)
Physical disability	137 (18.5)
Travel	136 (18.5)
Cognitive/emotional disability	132 (18.0)
Interpersonal issues	129 (17.5)
Physical injury	129 (17.4)

Note. Number and percentage of respondents who selected "often" or "very often." Missing *n* excluded from denominator for percentage calculations. Missing ranged from $n = 11$ (1.5%) to $n = 25$ (3.3%).

topics were online options, with an instructor-led online or webinar class being most preferred. An online library of resources and an online, self-guided class were selected equally as often and came in close behind the top preference (see Supplemental Material). The least preferred options for receiving information were through radio, telehealth counseling, or religious/church/spiritual leaders.

Several gender differences emerged in preferences for receiving information: men selected general telephone helpline more often than women ($\chi^2 = 10.11, p = .001$), and women selected online, self-guided class (no instructor present; ($\chi^2 = 5.83$, $p = .016$) and podcast ($\chi^2 = 9.91$, $p = .002$) more often than men. With Bonferroni correction (individual chi-square test $p \leq .003$), the gender difference in preference for an online, self-guided class (no instructor present) is no longer significant (see Supplemental Material).

Regarding age and dissemination strategies, social media was a popular channel among all except the oldest age group, and this relationship was one of the strongest ($\chi^2 = 20.52$, $p < .001$). Another strong relationship existed between age and "printed resources mailed to you" ($\chi^2 = 19.63$, $p < .001$; see Supplemental Material). The strongest age-related relationship was preference for an online, self-guided class ($\chi^2 = 29.48$, $p < .001$), with a consistent pattern of increasing interest across the age groups from youngest to oldest. All aforementioned relationships remain significant with Bonferroni correction (individual chi-square test $p \leq .003$). Two additional age-related relationships worth highlighting are general telephone helpline ($\chi^2 = 15.81, p = .001$) and online or webinar class (with an instructor) ($\chi^2 = 12.29, p = .006$). The former remains significant with Bonferroni correction, while the latter is marginally significant with correction.

Discussion

Perceived Stress, Sources of Stress, and Stressor Pileup

Based on the average PSS score, this research suggests that most agricultural producers throughout the Western region of the United States are experiencing a medium level of stress (mean PSS score = 18.3). While these results are similar to other recent studies that collected PSS scores from farmers and ranchers (e.g., mean PSS score of 18.9 among Canadian farmers; Jones-Bitton et al., 2020) and average PSS score range from 14 to 19 among Polish farmers (Wojcieszek et al., 2020), it highlights the need for immediate access to stress management resources so that agricultural producers are better equipped to manage their stressors.

This research also identified that women producers had a higher PSS score than men, as well as a higher stressor pileup load. These differences could be a result of numerous factors including that women in leadership positions on family farms often serve in additional roles such as childcare providers, caregivers for older family members, as well as health care insurance providers through off-farm employment (Schmidt et al., 2021), which aligns with research that suggests that, in many cases, women report more elevated levels of stress compared to men (Kessler et al., 1985). Recent studies have also reported that being a woman is positively associated with perceived stress (Costa et al., 2021; Graves et al., 2021), but why exactly this occurs needs further investigation. Another variable at play could be that women are more likely than men to admit to their stressors (American Psychological Association, 2012), which could in part be due to the increased stigma for men to admit to their stress levels, especially in agricultural settings where the "pull yourself up by your bootstraps" mentality is often expected.

Although women reported significantly higher PSS scores as well as stressor pileup levels, another demographic variable of note becomes age, as both PSS levels as well as stressor pileup are significantly lower among the oldest age group. This finding would be consistent with a 2016 study conducted with 1,546 adults aged 21–100 years, where it was suggested that the possibility of a linear improvement in mental health (rather than a U-shaped curve) begins in adulthood (Thomas et al., 2016), as well as more recent studies that suggest that older age can often be characterized by more positive emotional experience (Sun & Sauter, 2021).

In terms of which stressors are most predominant in producers' lives, this research found that workload, financial worries, and lack of time were the three most cited. The combination of these speaks to the need to work with producers to discern ways in which they could potentially work more efficiently, which could help both manage workload as well as free up time. The financial worries stressor could be related to the variety of external forces such as market prices, trade policies, and environmental factors that impact the profitability of the operation, thus presenting in stress over potentially negative financial outcomes. Furthermore, existing research suggests that the general financial situation for agricultural producers is worsening, especially in the aftermath of numerous COVID-19 shutdowns. According to Bochtis et al. (2020), "the pandemic put the annual budget for agricultural worker salaries at risk, thus increasing financial stress due to economic uncertainty, lower productivity, higher transport and labor costs, as well as food shortages" (Bochtis et al., 2020, p. 2). Other researchers noted that agricultural financial stress may also function independent of other sectors of the economy, in part due to the combination of declining land values, higher debt use, and less net farm income (Dinterman et al., 2018).

Desired Stress Management Topics and Delivery Methods

To help them manage stress, agricultural producers in the study were most eager to learn more about financial topics, which align well with the stressor producers indicated as causing high stress levels. In response, community and government organizations (e.g., Farm Bureaus, Farm Service Agencies, Cooperative Extension Services) should capitalize on producers' willingness to learn more about financial topics and provide accessible financial education whenever possible. The fact that "financial topics" was the highest cited stressor does support the decision of many states (e.g., Washington) to hire agricultural economists as a strategy to inform producers about economic trends in an effort to address agriculture-related financial stress.

In addition to expressing interest in learning more about financial topics, agricultural producers were very interested in learning more about a variety of personal wellness topics (such as physical activity, relationship support, nutrition/cooking, and sleep) in order to help them manage their stress. This finding speaks to the fact that producers are ready and willing to learn stress mitigation strategies in areas of their life in which they have some level of control, which is encouraging from a public/behavioral health perspective. Going one step further, opportunities focused on personal wellness should be tailored to members of the agriculture community, both in terms of content and delivery modality.

The present study also evidenced variability in stress management topics by gender. There was a statistically significant difference in men wanting to learn more about both parenting and support groups as a stress management tool. Whereas traditionally, parenting classes may have been geared more toward women, data illustrate that parenting classes should be marketed and perhaps even have content specifically tailored to men. Moreover, community-organized support groups should prioritize outreach to male producers in their area.

Women were more interested in learning more about problem solving and retirement planning, though these differences were not statistically significant. Nevertheless, these are topics about which women are seeking more information to better manage their stress. Educational opportunities, which may be considered traditionally better attended by men, need to be marketed so that they are inclusive of, and welcoming to, women in agriculture.

Interest in stress management topics also varied significantly by age, with younger producers (ages 18–32) most interested in cooking/nutrition topics, those aged 33–48 most interested in financial topics, and those aged 49+ most interested in retirement planning topics. Knowing that this interest varies across the life span should be capitalized on with program marketing and content tailored to individuals in these specific age groups.

Regarding preferred ways to learn about stress management topics, online classes (either with an instructor or self-paced) and online resource libraries were most desired by agricultural producers in the present study. This preference could be reflective of internalized stigma surrounding reaching out for assistance with stress management and mental health topics, particularly in close-knit rural communities where many people know each other personally. Online avenues of learning provide a level of anonymity that is perhaps more comfortable for those individuals who would like more information but do not necessarily want others in their community to know that they are struggling and therefore reaching out.

When analyzed by gender, men were significantly more interested than women in receiving information via a telephone helpline, whereas women were significantly more interested than men in learning via podcasts. This is useful information to have, since directly marketing existing telephone hotlines (Farm Aid, AgriStress Helpline, etc.) to men may increase their usage since they already expressed interest, they may just be unaware these exist. However, when looking at the call data by gender for the Farm Aid hotline, two trends emerge: the percentage of calls coming from men is already increasing year to year and the percentage of calls from men is now higher than those coming from women (men comprised 38% of calls in 2018, 45% of calls in 2020, and 61% of calls in 2022; R. Vanboven, personal communication, October 3, 2022). To better reach women producers under stress, tailoring the marketing initiatives of existing farm stress management podcasts (such as AgWellness, Rural Realities, Cutting Fences) would be beneficial, since women were most interested in this dissemination strategy.

When analyzed by age group, data show that an online class with an instructor, an online library of resources, face-to-face counseling, and podcasts are information dissemination channels that are popular for all age groups. However, data illustrate that older age groups preferred online, self-guided classes without an instructor and printed resources mailed to them.

The present study reinforces the need for tailored prevention efforts, a takeaway that was also prominent in a recent study comparing farming and non-farming-related suicides across the United States between 2003 and 2016 (Kennedy et al., 2021). Though not always reported in published literature, some of the Western states have been making strides in designing prevention programs and other interventions to address farmer/rancher stress. Examples of these existing programs include AgWell, a program designed to provide

stress management support to agricultural workers throughout Wyoming, Colorado, and New Mexico (Ag Well: Supporting Well-Being in Agriculture, 2022), and California AgrAbility (2022), whose mission is to promote independence in farming and rural living, which includes providing mental health resources to agricultural communities.

Limitations

This research is not without limitations. Given the geographic area covered, the sample size was small. Although a small sample may not have robust representativeness, the data still carry meaning and value in representing voices from a community that is underrepresented in the literature. Unfortunately, due to some states having a small sample, we were not able to make any state-based comparisons. Prior to data cleaning, the survey had bot responses. We suspect that this occurred since we advertised across social media platforms and via electronic newsletters and had a financial incentive attached. We developed a data cleaning protocol (which included deleting responses that were completed in under 5 min, had an IP address that came from a region outside of the Western United States, and/or contained nonsensical qualitative data). We were diligent in removing suspect cases, and it is possible that we removed some valid responses. All demographic items were at the end of the survey. The intention was that it would yield a higher response rate for the context questions, which was important since these variables are not included in governmental surveys of agriculture. However, because the drop-off rate at the end of the survey was substantial, we do not have a complete picture of participant demographics.

Future Research

This study was conducted with agricultural producers and does not reflect the perceived stress or preferences of those individuals that work on a farm or ranch, either full- or part-time. Future research with farm workers (both migrant and seasonal) should be conducted to ascertain the level of stress and desired topics/dissemination strategies among this subpopulation of the agricultural community in the Western United States. Future research should also focus on better understanding of how other demographic variables (e.g., education level or ethnicity) and/or farm-specific variables (e.g., type of primary cash crop or inclusion of off-farm work) may correlate or act as protective factors against high levels of perceived stress. Last, since there are community-level interventions currently in place to help farmers and ranchers manage their stress and improve their well-being, these initiatives should be rigorously evaluated to determine whether they are able to effectively provide mental health support to the agricultural community. If feasible, successful programs should be replicated across the Western region.

Conclusion

Stress is inevitable. Although short-term stress can bring some health benefits, our research indicates that many agricultural producers across the Western United States have gone beyond living with occasional, short-term periods of stress; rather, they face numerous chronic stressors and concerning levels of perceived stress. However, one positive takeaway is that producers are interested in learning more about managing their stress and making improvements to support their mental health. This research provides insight into which stress management topics are most desired by different demographic groups of agricultural producers, as well as how they would most like to access such information. Now, it is up to community organizations, public–private partnerships, and other invested stakeholders to provide access to this programming based on producers' preferences.

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