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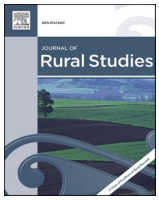

Mental health, well-being and resilience in agricultural areas: A research agenda for the Global North

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ABSTRACT

This paper offers an overview of research perspectives, gaps, and priorities within the field of mental health and well-being among farming communities in the Global North. Developed by an international working group of scholars with expertise in the mental health and well-being of agricultural and rural communities, it outlines the importance of developing an international research agenda in this subject area by presenting five propositions. Each of the propositions addresses current research gaps and/or highlights potential advancements in investigations into one of the following areas of study: i) who is being researched, ii) what is being researched, iii) geographical gaps in research, iv) informal and formal support systems, and v) methodological approaches and issues. The purpose of this paper is to encourage discussion and present a potential agenda around which new studies might be inspired and developed, as well as to help drive forward more focussed, joined-up research across the Global North to facilitate more effective outcomes for individuals belonging to agricultural communities.

1. Introduction

Individuals belonging to agricultural communities are subject to numerous internal and external stressors, the burden of which can be overwhelming. This can lead to the mental well-being of some members of agricultural communities being poor. This is shown to be the case across multiple countries in the Global North (Becot et al., 2023; RABI, 2021; Hagen et al., 2019; Younker and Radunovich, 2022). While there has been little measurement of mental health in rural areas across space and time, research suggests that no significant improvement has occurred over the last forty years, despite the fact that issues relating to mental health and well-being in rural communities were first highlighted by academics in the late twentieth century (Geller et al., 1988; Belyea and Lobao, 1990; Villarejo and Baron, 1999; Gregoire, 2002;

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Hagen et al., 2019; Wheeler and Lobley, 2022). Such issues have since, however, been the focus of investigation at varying levels among academics concentrating on rural spaces, particularly in the United States (U.S.), Australia, and the United Kingdom (U.K.) (Hagen et al., 2019; Daghagh Yazd et al., 2019). While a substantial body of work on the topic exists, which has seen a sharp increase in recent years, research efforts have largely been single country or region-focused, with little attempt to unify multinational academics to explore related issues, research dilemmas, or methodological approaches with the aim of outlining a transnational research agenda. Indeed, we only know of three empirical studies that compare mental health related topics across national borders (Price, 2012; Droz et al., 2014; Rose et al., 2023). Mental health and well-being in agricultural communities is already a global issue and commonalities regarding high rates of mental health challenges, and the sources of these challenges, are prevalent across many countries in the Global North (Daghagh Yazd et al., 2019; Knežević Hočevar and Janssen, 2023). While not necessarily homogenous culturally, many of the issues driving poor mental health and well-being within agricultural communities are similar across national contexts in that they reflect the globalization of the economy, concentration and consolidation in the agricultural sector, state descaling, policy and market fluctuations, environmental challenges, and climate change. Exploration of mental health challenges across borders is, therefore, perceived as being a positive next step in building an effective research agenda. This is because cross-national comparison is key to understanding i) the variations in the magnitude of these challenges, ii) which stressors appear more important under what conditions, and iii) the social, cultural, economic, and political conditions under which the well-being of farming communities is best supported (Droz et al., 2014).

To explore the mental health and well-being challenges of farming communities in different countries, as well as methodological approaches and gaps in research, a working group was convened at the XXIXth European Society for Rural Sociology Congress - *Crises and the futures of rural areas* (held in Rennes, France, July 3rd - 7th, 2023). The goal of the working group was to encourage a transnational coalition of academics with a shared interest in the mental health and well-being of people living and/or working in farming, and to encourage a shift from siloed working on the topic towards a more integrated approach to finding solutions. The working group title was *Bringing matters to the head. Mental health, well-being and resilience in rural settings*, and attracted 8 submissions from 12 authors (some combined) from institutions based in the U.K., New Zealand, the U.S., Greece, and Slovenia. Following the two congress sessions, the speakers convened to develop propositions for the transnational research agenda. We used our experiences and expertise in and across the varying countries to identify gaps in research and to critique current approaches and methodologies in the field. This article provides a summary of the patterns that emerged among the varying propositions, all of which are informed by the existing literature, where available. In total, five propositions have been suggested which, while not exhaustive, capture some of the key research gaps and priorities identified by leading researchers in this field. This manuscript is not intended as a comprehensive literature review but rather an agenda around which new studies might be inspired and developed to examine and drive forward more focussed research in the specified areas. While the terms 'rural' and 'agricultural' are used throughout the paper, the overall emphasis of this agenda is on people working in agriculture, acknowledging that mental health issues pertaining to the wider rural are vast, spanning numerous extremely diverse cohorts, each with their own specific set of challenges. In addition, we acknowledge that issues related to the mental health and well-being of farmers and others working in agriculture are also prolific in the Global South, for example in India (Younker and Radunovich, 2022). However, given the geographic composition of our working group and due to important differences in farming systems and in political and economic systems, as well as to prevent scope creep, this research agenda focuses specifically on the Global North.

The following section outlines the resultant propositions, examining who and what is being studied, including at a geographical level, as well as identifying research gaps related to support systems and methodological approaches.

2. Conceptualising the current research gaps related to mental health and well-being in rural communities

2.1. Proposition One. Research on population groups – 'Who' is being studied?

The farm population is heterogeneous and the lived realities of those working in agriculture vary greatly based on aspects such as their demographic characteristics (e.g. age, gender, race, and ethnicity), socio-economic status (e.g. income, education, immigration status), role in agriculture (e.g. farm operator, hired farm worker), access to land and financial assets, and political influence. These variations are important to consider as research suggests that they interact with well-being in agriculture (Daghagh Yazd et al., 2019; Hovey and Magaña, 2002; Henning-Smith et al., 2021).

The current body of research literature in the subject area is rapidly growing but historically, certain cohorts have been ignored or overlooked in favour of others. This has left the mass of the literature as heavy in certain areas (such as rural masculinity) (Alston, 2012; Bryant and Garnham, 2015; Creighton et al., 2017; Hammersley et al., 2021; Roy et al., 2013) and light or non-existent in others. This disproportionality means that, until recently, cohorts such as young farmers, women, children, and farm workers have rarely acted as the principal focus of research. In some countries, such as the U.S., this translates to limited mental health support specifically targeted to these cohorts (Henning-Smith et al., 2021). This section, therefore, conceptualises the current research gaps related to *who* is being studied.

2.1.1. Young farmers

More work is needed on younger farmers, their mental health challenges, and how to support them. For example, in New Zealand, young rural labourers make up a large proportion of rural suicides (Beautrais, 2018). One cause is loneliness (Hawkley and Cacioppo, 2010; Perlman and Peplau, 1981), which may peak in early adulthood (Luhmann and Hawkley, 2016) and be associated with a lack of close relationships and meaningful interactions (Green et al., 2021). Being socially connected to others may act as a buffer against the many causes of stress experienced by young farmers, such as that caused by the varying pressures exerted at that critical juncture of their lives (e.g. starting a family or taking over/starting a business) or from multigenerational working arrangements. Research should, therefore, focus on generational isolation, wherein younger farmers may be surrounded by people who are older and generationally less connected to them (Holton et al., 2023a). This includes research on the intersections of intergenerationality and succession, and their implications for care. Farming identities, especially for farming men, are (re)created relationally and across different generations, and whilst studies have noted that such identities may be subject to change (Brandth, 2016), those of 'breadwinner' and 'provider' prove enduring (Riley and Sangster, 2017). Such (inter)generational dynamics need to be addressed, particularly around the issue of succession, as we seek to understand how this affects young farmers' mental health and their sense of autonomy and identity. In addition, research should explore how to support these young people. Research in New Zealand shows that few young people dying of suicide had contact with a doctor in the period prior to their death, suggesting interventions should be delivered in settings other than primary care (Stanley-Clarke, 2019). Social media as a tool is becoming an area of study, but there could also be more work which considers the importance of material spaces and physical interactions (see section 2.4.d). For example, Hay et al. (2024) found that recognition and connectedness in relation to educators are key to successful well-being education. This can, for example, be

achieved via peer-to-peer education. However, more work is needed investigating how to deliver well-being support to young people outside of educational institutions.

2.1.2. Women in farming

Internationally, there has been relatively little research focusing directly on the mental health and well-being of women within farming. Whilst some studies do include both men and women, few have explicitly explored the nature and extent of differences in levels of well-being and experiences of various stressors. Gender-focused research has tended to explore the drivers affecting male farmers and/or the role of masculinities in shaping help-seeking behaviour, rather than on how the gender-specific challenges faced by women within the industry impact their well-being (Bryant, 2022). There has been a particular lack of attention on farm women's physical and reproductive health (including puberty, pregnancy, in/fertility, menstruation and menopause), and how this impacts upon, and is impacted by, their mental health and wider well-being (Wheeler and Nye, 2024). However, women have always played a key (if largely invisible) role in the persistence of family farms (Sachs, 1983) and they continue to make up an important part of the industry (Henningham and Morgan, 2018). Their health and well-being thus deserve greater attention.

The little evidence that does exist underscores the importance of the topic, as it suggests that women are at least as - if not more - likely than men to experience mental health problems (Wheeler and Lobley, 2023). We also know that women face different well-being challenges than men, for example around balancing multiple roles such as childcare, domestic work, farm work, and off-farm employment (Budge and Shortall, 2023; Becot and Inwood, 2022). This can translate to poor sleep and stress about 'how to fit everything in' (Farmstrong, 2018; Rissing et al., 2021). Furthermore, gender inequality continues to pose barriers to women becoming entrepreneurs and participating equally in the job market (Pini, 2002; Shortall et al., 2022; Tsiaousi and Partalidou, 2021). More research is needed to understand the diversities and complexities of women's experience of these issues, and their consequences for mental health. There is also a need to examine how gender perspectives can be effectively integrated into existing extension and education programmes, which are often gender blind (Barbercheck et al., 2009; Gorman and Kinsella, 2023; Tsiaousi and Partalidou, 2023).

2.1.3. Children and youth of farming families

The limited research on the mental health of children and youth in farming families is inconclusive and mostly from the U.S. While research indicates that farm children and youth are not isolated from the challenges faced by their parents (Rudolphi and Berg, 2023), they have been found to be less likely to be flagged for suicidality (VanWormer et al., 2024). But, seeing their parents experiencing mental health challenges during turbulent periods, such as the 1980s farm crisis in the U.S., may act as a deterrent for these children to take over the farm later on (Conger and Elder, 1994), as well as impact upon their wider health. As such, there is a clear need for research into children and young people growing up on farms in relation to their mental health generally, but also their experiences of special educational needs and disabilities (e.g. dyslexia, dyspraxia, autism, neurodiversity) (Smith et al., 2020), and how that affects career choices and experiences of farming and well-being in later life. It is also key that the influence (both positive and negative) of farm family challenges, relationships, and trauma on children's mental health, as well as personal resilience, is explored.

2.1.4. Farm workers

Farm workers are not immune from experiencing mental health challenges, but the source of these challenges varies. For example, an extensive body of research from the U.S. on migrant farm workers points to issues connected to inadequate working and living conditions, fear of deportation, isolation from family and community, language, and transportation barriers (Baker and Chappelle, 2012; O'Connor et al., 2015; Pulgar et al., 2016; Ramos et al., 2016). However, research on this topic in other regions, including Europe and Australasia, is scarce. Future research, therefore, needs to consider farm workers (domestic and foreign born) as they are the most vulnerable actors in the agricultural sector. There is also the need to explore the linkages between the challenges faced by farm operators and farm workers to help identify common solutions. This area of research could be further extended to include those working within the ancillary agricultural service industry.

2.1.5. Diverse and underrepresented groups in farming

The need for more research focused on women has been outlined in detail above, but gender is not the only aspect of identity that has been relatively neglected in research on mental health in agriculture. Whilst some studies do exist which explore the well-being of (for example) Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, and Asexual (LGBTQIA+) farmers (Hoffelmeyer et al., 2023) and ethnic minority migrants in the U.S. (Hovey and Magaña, 2002), little is known internationally about the experiences of underrepresented groups (including Black, Indigenous, and people of colour (BIPOC), disabled people, and LGBTQIA + individuals) within agriculture or how drivers of poor mental health might differ for these groups. Intersectionality is also important to consider in this respect; for instance, there is some literature indicating that female migrant farmworkers in the U.S. face multiple well-being challenges associated with their ethnicity and gender, including economic inequalities, isolation and sexual abuse (Meierotto et al., 2020; Van Hightower et al., 2000). Greater attention to underrepresented groups within the literature would be valuable as it has the potential to promote a more inclusive approach to support systems, health interventions, and agricultural policy more widely.

2.1.6. Individuals belonging to the landscape of support (professional support workers and accidental counsellors)

Support from informal sources (friends, advisors, rural communities) tends to be rated as more valuable than formal sources because they are trusted (Bjornestad et al., 2019; Furey et al., 2016; Shortland et al., 2023). Examples of individuals who encounter farmers/workers regularly, and hence could act as important sentinels for individual- and population-level support, include people in rural communities, haulage drivers, chaplains, bank managers, assurance inspectors, agronomists, and veterinarians. There has been some effort recently, for example in the U.K., Belgium, Ireland, the U.S., and Australia, to offer mental health first aid training and other support to a wide pool of individuals who come into contact with farmers/workers (e.g. Cuthbertson et al., 2022; Perceval et al., 2011; Wheeler et al., 2024). However, we still have very limited information across these countries (and elsewhere) on which individuals might be best placed to identify problems of mental well-being in farming communities (see also 2.4.c), and the ways in which providing such support might impact their own well-being. It is suggested that research exercises should focus on mapping the formal and informal networks of support for farmers within regions and on engaging those supporters to understand why and how mental well-being help can be improved across the industry, for both the supported and the supporter.

2.2. Proposition Two. What is being studied? The drivers and variables contributing to mental health and well-being issues

Research into mental health and well-being in farming tends to use a particular cohort as a fulcrum around which to explore various issues related specifically to that cohort, rather than emphasising one particular variable or driver as an exploration point in itself. While it is often the case that mental health issues stem from the burden of multiple variables, by conducting variable-specific research, the impact of each variable or driver might be determined and consequently, explained, potentially allowing for more targeted resolutions to be developed. There are key questions about variations in the prevalence of these

challenges at national (and sub-national) levels and the range of factors shaping these, as well as other, variations. The below sub-propositions consist of specific variables or drivers identified as likely to require further exploration under the wider theme.

2.2.1. Water scarcity

A particular issue among rural agricultural communities in the western U.S. and Australia, but increasingly affecting numerous other regions globally, water scarcity is fast becoming a significant driver contributing to mental health and well-being issues among agricultural populations (Alston and Kent, 2008; Batterham et al., 2022; Chiswell, 2023; Hanigan et al., 2018; Sysak, 2013; Daghagh Yazd et al., 2019). It is predicted that by 2050, 3.9 billion people will live in river basins under severe water stress, totalling 40 percent of the world's population (Leflaive, 2012). Five times as much global land is estimated to be under "extreme drought" compared to 2020 (WMO, 2020) and the demand for global water is projected to increase by 55 percent (Holloway, 2012). Water insecurity has already been shown to be a driver of poor mental health in some rural (and non-rural) communities (Kumar et al., 2020; Wutich et al., 2020; Daghagh Yazd et al., 2020) but a more detailed examination of the impact of water scarcity on rural mental health, particularly in relation to agriculture and in different geographic regions, is required.

2.2.2. Climate change, adaptation and capacity building

The impact of climate change and related extreme weather on the mental health of people working in agriculture remains an understudied area of research, with geographical pockets of investigation lying largely in Australia, some parts of the U.S., China and India (Palmer and Strong, 2022; Daghagh Yazd et al., 2019). The impact of climate change varies across countries and regions but is likely to be significant on a global scale, with people working in agriculture either being impacted currently, or at risk of being impacted in the future. Challenges faced are likely to stem from production issues, as well as anxieties related to identity and sense of place (Ellis and Albrecht, 2017; Howard et al., 2020; Wheeler and Lobley, 2022). The effects of this require immediate examination to not only evaluate levels of preparedness, and prescribed adaptation and capacity building interventions, if any, but also to highlight any potential mental health impacts and how these might best be negotiated at the varying stages of climate change as it happens.

2.2.3. Physical health (and how it links to mental health)

There has been some research investigating the physical health of individuals belonging to agricultural communities (Brumby et al., 2013; Jain et al., 2018; Osborne et al., 2010; Walker-Bone, 2002), and much of this has highlighted poor levels of activity, exercise, diet and associated health conditions among farmers, at least in some countries (Abshire et al., 2021; Brumby et al., 2011; Kavanagh et al., 2021). However, future research would benefit from further exploration into the linkages between physical and mental health, as well as between health, injury, and other aspects of well-being within a farming context, especially since it is well recognised that each variable can significantly impact upon the other (Doherty and Gaughran, 2014; Petitte et al., 2015). There is some evidence from the agricultural sphere that stress and risk of injuries are connected (Thu et al., 1997; Glasscock et al., 2006), and that demographic factors are important to consider in relation to such issues. In Greece, for example, the presence of physical, cognitive, and motor disabilities among older farmers have been shown to increase physical and mental burdens that heighten the risk of accidents, which in turn induce high stress and contribute to the worsening of healthcare conditions (Evangelakaki et al., 2020). Research that investigates these types of interactions across different farm types, geographic locations, and demographic groups, and which seeks to identify strategies to minimise both safety risks and poor health within agriculture more generally, is critical.

2.2.4. Role of policy

Research on mental health in agriculture frequently points to stressors originating from increased regulation, concentration and consolidation in the food system, and low and fluctuating farm income. Yet, to our knowledge, little research has empirically sought to understand how policies, whether agricultural, environmental, or trade-related, shape mental health in agriculture. This might be, in part, explained by the lack of transnational research which would enable researchers to tease out the effects of varying policy environments. The exception that we are aware of is a comparison of the impact of agricultural policy on the well-being of dairy farmers in France, Quebec and Switzerland, which does point to varying effects (Droz et al., 2014).

As much as policy may negatively impact the mental health of agricultural communities, it may also play a role in bolstering it. This is the case with social policy which is, by design, intended to support the social and economic well-being of individuals. Yet, as argued by Becot and Inwood (2020), there is a dearth of research on the role that social policy may play in supporting agricultural communities in the face of on-going changes. The limited research on the topic mostly comes from the US and Switzerland, which arguably have lower levels of social safety nets compared to the rest of the Global North as a whole. This body of work shows a number of challenges in meeting social and economic needs associated with health care, childcare and aging with a consequence on people's well-being (Rissing et al., 2021; Becot and Inwood, 2022; Contzen et al., 2016). Furthermore, in their cross-national study, Droz et al. (2014) found that it was the country with the stronger social safety net, France, where farmers seemed to fare better.

A line of research focused on the role of policy has the potential to provide key insights into variations in mental health challenges across countries, as well as the type of policy instruments that can best address underlying root causes of these challenges.

2.2.5. Language, terminology and associated narratives

Despite the complexity of factors shaping the agricultural population's mental health, and their ability and willingness to seek help, we note a common narrative in extension services, farm organisations, government agencies, and in some of the scholarly literature, that famers do not want to seek help, often with undertones of gender and political identities discourses (Hagen et al., 2022; Nye et al., 2022; Roy et al., 2017). This may, in part, explain the prevailing approaches centred on triggering attitudinal and behavioural changes. Based on our work, we foresee a productive line of research on narratives and stereotypes in the space of agricultural mental health challenges. This includes investigating how current narratives may play into stereotypes of the farm population (e.g. agrarian ethics, independence, stubbornness, and privacy) which in turn could reinforce stigma connected to mental health and seeking help. For example, studies of mental health support for the agricultural population in the Midwest of the U.S. found an extensive focus on individual-level solutions focused on people making changes through self-help and coping strategies. Meanwhile, mental health supports rarely included information about financial resources even though mental health challenges in agriculture often have financial underpinnings (Batterham et al., 2022). Another line of research is needed around how different terminologies related to mental health are received, perceived, and responded to by people in the farming community. While there has been progress in some countries around the ability to discuss mental health publicly, the discussion remains taboo in other countries such as Greece or among certain cohorts, including in the U.K. and Ireland (King et al., 2023; Rose et al., 2023). To circumvent such stigmas, some interventions use alternative wording such as 'well-being' or alternate social network descriptors such as 'Farmer's Yards' (Conway et al., 2023) in order to be more appealing and avoid stigmatisation.

2.3. Proposition Three. Geographical gaps in research

Based on a number of literature reviews, specifically Hagen et al. (2019), Daghagh Yazd et al. (2019), Díaz Llobet et al. (2024), and Becot et al. (2023), the bulk of research on mental well-being amongst agricultural communities has tended to focus on a limited group of countries. Though reviews of the literature may be biased by language, terminology, and other inclusion/exclusion criteria, these reviews on mental well-being and suicide found a clustering of studies in the U.S., Australia, India, and the U.K., with fewer studies in other parts of North America and Europe. A small proportion of literature was identified in Africa and South America, although this could be the result of search bias. Becot et al. (2023) propose that certain research gaps and the clustering of research in certain countries might also be attributed to the role of stigma, religion, a lack of funding, or hegemony of English in the scientific literature. Nonetheless, these findings indicate that further research is needed on the state of mental health and well-being across many regions in the Global North. The existing literature describes similarities in terms of sources of stress and help-seeking strategies, but it remains to be seen as to whether such patterns are replicated by other countries in the Global North where research is lacking. While we do not have the scope to examine each country specifically, below are some examples of areas where further studies would be beneficial.

2.3.1. Europe

One geographical gap identified by the working group, for example, is Greece, where few studies exist related to the topic of mental health in agriculture. Greeks have a higher mortality risk because they are more socially isolated than Western and Northern Europeans (D'Hombres et al., 2018) and a report on the impact of COVID-19 (Anastasiou and Duquenne, 2021) stresses the geographical dimension of social isolation where, for example, people living on islands and in mountainous rural areas manifest higher rates of loneliness and stress. However, apart from a few studies (Papadopoulos and Fratsea, 2021; Frengidou et al., 2023) mental health issues specific to the farming community in Greece are rarely discussed at any level (ground-level, academic, or policy making).

Similarly, Slovenia has seen few studies related to this area. Agriculture in Slovenia has changed drastically since the proclamation of independence from socialist Yugoslavia in 1991 and accession to the European Union in 2004. Despite numerous opportunities to advance farms, which was not possible under socialism, people working in farming experience many uncertainties, reflected by the decrease in the number of farms, lack of motivation for farming among younger generations, reported work accidents, health impairments and suicides (Roy and Knežević Hočevar, 2019). Until recently, distress and mental well-being of farmers and people working in agriculture was a neglected topic in both medicine and social sciences in Slovenia. Since 2020, there have been two research projects that directly address the suffering of farmers and the response to work-related injuries and illnesses - "Changes in Agriculture through the Farmers' Eyes and Bodies" (2020–24) and "Response of farming families to the consequences of accidents at work and occupational diseases" (2020–22). Further projects were participatory, either aimed at sharing knowledge on rural mental health, or at developing an integrated approach to facilitate work-life balance in rural areas. In summary, farmers' distress and mental well-being have become a recognised research topic in Slovenia, but, to date, there are just a few, mostly qualitative studies, conducted in limited rural areas.

Similar gaps to those identified in Greece and Slovenia are likely to be replicated elsewhere within Europe. Current cross-national research projects in this region, such as FARMWELL and SafeHabitus (https://www.safehabitus.eu), are going some way to addressing this, but there remains significant scope for both focused studies in neglected countries and wider comparative international research across the region.

2.3.2. Australasia

Moving away from Europe, research gaps are also identified in Australia and New Zealand, despite a relatively strong existing body of literature relating to these areas. A wide range of studies have been conducted in the well-being space, particularly in Australia. These studies focus on drought-related stresses incurred by farmers (e.g. Edwards et al., 2015; Gunn et al., 2012; Wheeler et al., 2018; Hanigan et al., 2018), the relationship between farmer mental health and the environment (e.g. Batterham et al., 2022), and how to equip farmers with tools to cope with stressors (e.g. Fletcher et al., 2024; Gunn et al., 2021). Although in New Zealand there is less focus on drought specifically, well-being research does focus on building environmental resilience to cope with unexpected events, such as prolonged periods of drought or earthquakes (Knook et al., 2022). What is lacking in both New Zealand and Australia, is a holistic overview of how well-being drivers at a farm level interact with supporting organisations, such as support provided by the community, religious organisations, veterinarians, consultants etc. There is a need to bring together research in this space and map how the landscape of support interacts with drivers at a farmer level.

2.4. Proposition Four. Informal and formal support systems— Impact, practice and applied research

Shortland et al. (2023) used the recent theoretical construct of 'landscapes of support' to guide their research on support systems in agriculture (in the U.K.). This describes a complex landscape of support available to farmers/workers for their mental well-being, including formal support from healthcare providers and charities, but also informal support from faith groups, friends, peer groups, advisors, and other people with whom they regularly interact. However, existing research and policy initiatives lack a granularity of knowledge surrounding the formal and informal networks that members of the farming community rely on for support (Henning-Smith et al., 2021; Price, 2012; Nye et al., 2023). There is, therefore, a need for further research in each of these areas in order to ensure that the support needs of farming populations are most effectively met (most likely through a multifaceted approach involving a combination of formal and informal systems). Specific areas demanding attention are detailed below.

2.4.1. Efficacy and acceptability of current approaches to mental health interventions

A major gap in current academic literature concerns the lack of robust evaluations of support system interventions (Younker and Radunovich, 2022). In a further review of the literature, Hagen et al. (2019) identified just 20 studies out of a total of 341 that had investigated the provision of rural or farming mental health support services, arguing that very few studies in this small sub-set had conducted or reported on their impact. Thus far, the minimal body of work points to mixed findings around the effectiveness of such programs, with limited efficacy at best (Derringer and Biddle, 2022; Hagen et al., 2019; Younker and Radunovich, 2022). Without evaluations of whether and how support systems are addressing the mental health of farming communities, and how help-seeking behaviours and preferences might be linked to the varying support networks available, it is not possible to form an evidence base through which to target different interventions to different farming populations (e.g. young vs. old, men vs. women, etc.).

Besides interventions directly focused on mental health, other interventions have used a more holistic approach. This includes addressing underlying causes of stress such as financial well-being, while also identifying farmers in need of mental health support. Others include broader social and economic goals, such as to attract and sustain young or new farmers, or to facilitate sustainable business development in rural areas (de Boon et al., 2024). Further areas of focus include the promotion of employment, growth, gender equality (including the participation of women in farming), social inclusion, and local development in

rural areas. Historically, many of these have been organized through grassroots bodies. However, with increased awareness of mental health challenges, coupled with concerns about the appeal of the agricultural sector, policy-level efforts are introducing new initiatives. These include the Local Action Groups (LAGS) of LEADER/CLLD in the European Union through the Common Agricultural Policy, and the Farm Ranch and Stress Assistance Network (FRSAN) in the US, through the Farm Bill. While several studies have examined the role played by such programs, including the Rural Financial Counsellors (RFCS) initiative in Australia (Clune and Downey, 2022; Downey and Clune, 2023; Fuller and Broadbent, 2006; Gunn and Hughes-Barton, 2022), and the Employee Assistance Program for Dairy Farmers in the U.S. (Dickens et al., 2014), other articles highlight the need to evaluate existing programmes, such as NY FarmNet in the US (Rose, 2024)]. There are a number of other examples of programmes, though we are not aware of any related published research. These include Rural Support in Northern Ireland, FarmWell (UK), Rural Alive & Well in Australia, the FarmRes project through the Council of European Young Farmers [CEJA] at the European level, Mental Health Ireland, COAG Jaén in Spain, Hof Und Leben in Germany, Satakunta MTK in Finland], and Farmstrong in New Zealand and Scotland. As such, there is an important need for research to understand the structure, role, and effectiveness of these programs in addressing mental health challenges in agriculture.

Further questions require addressing in this area. Firstly, it is important to examine how farm populations engage with support interventions and what their perspectives are. Secondly, research should seek to understand the extent to which interventions focused on addressing the manifestation of mental health challenges rather than the root causes (many of which are outside of the farm populations' control) could be seen as a form of blaming the victim and provide breeding ground for resentment. The work of Bryant and Garnham (2015), Halpin and Guilfoyle (2004), and Smolski and Schulman (2024) provides important building blocks for this work. This line of research is particularly important as in some geographical contexts, such as the U.S., farm organisations, extension services, and government agencies - the organisations who are now stepping in to provide help - are seen as responsible for the programs and policies that are contributing to mental health challenges in agriculture (e.g. through policy agendas) (Heaberlin and Shattuck, 2023; Hightower, 1972; DeLind, 1986). Finally, investigation is needed into the sustainability of short-term programs that may be developed and funded in times of crises but rescinded when the crisis is perceived to be over (DeLind, 1986; Becot et al., 2023).

2.4.2. Evaluation of extension and education programmes

To be able to cope with stressors and challenges, it is important to build resilience in mental health and well-being in rural communities (Rose et al., 2023). One means of achieving this is to introduce those working and living on farm to well-being skills and knowledge via extension and education programmes. Knook et al. (2022) report on one extension programme for mid-career farmers focusing on building resilience in profitability, environmental performance, and well-being. Two main findings derive from their study: i) well-being is intrinsically linked to other sustainability challenges and, therefore, well-being considerations need to be introduced simultaneously alongside new profitability or environmental practices; and ii) there is a need to create a 'safe' environment to introduce a new, and potentially sensitive, topic such as well-being. A safe space can be created via peer-to-peer education, an observation that is also made by Hay et al. (2024), who study face-to-face education of agricultural tertiary students on mental health and well-being. Gaps remaining in the extension and education space are twofold. Firstly, how to scale up extension and education services in relation to well-being to larger groups, as previous studies have mostly focused on small extension programmes. Secondly, with a growing cohort of online students, further investigation is needed into the effective delivery of online mental health programmes.

2.4.3. The role of farm intermediaries in providing informal support

In recognition of the value of informal support systems for farmers (see section 2.1.f), some recent research has attended to the role of farm intermediaries within these. Farm intermediaries – which include individuals variously termed as 'extensionists' and 'farm gatekeepers' – have been acknowledged as frequently finding themselves informally supporting farmers with mental health issues in the course of their work and have thus been coined 'accidental counsellors' (Perceval et al., 2018) or 'antennae' of the challenges farmers face. Examples of work in this area include a programme in Belgium, run by the government and agricultural support organisations, in which a well-being action plan and information campaign is aiming to help rural professionals recognise signs of farmer distress at an early stage, and to know how to refer them to professional support (Agriculture and Sea Fisheries Agency, n. d.). Similarly, a pilot study in the U.K. exploring the experiences of 'accidental counsellors' in farming has led to the development of an online resource hub where people within the industry can find help and guidance around supporting the mental health of farmers and signposting them to appropriate forms of support (Wheeler et al., 2024). The 'On Feirm Ground' project in Ireland is also informing a bespoke training programme on this topic specifically for farm advisors (Hammersley et al., 2023). Aside from these programmes, however, research in this area is still emerging and there is a need to enhance understanding within a range of contexts. For instance, more studies investigating the extent to which farm intermediaries are willing and equipped to take on a supporting role, and how the effectiveness of this type of support might be maximised, would be valuable.

2.4.4. Use of social media and material spaces

Research on loneliness and well-being in farming communities has noted how digital spaces may have a discernible impact on how farming people negotiate (dis)connection and isolation within their everyday lives (Holton et al., 2023a, 2023b). This work parallels wider discussions of social media use, noting the potentially negative aspects of 'upward comparison' to others and what has been termed 'curative entrainment' (Holton et al., 2023a), wherein feelings of isolation may be exacerbated as discourses of (over)work and isolation become replayed online. More progressively, social media offers a fruitful avenue for (re)connection with others and spaces of (self)care. The use of social media may also allow a form of 'everyday activism' (Vivienne, 2016) around mental health, both through raising awareness of mental health resources and organisations, through to sharing their own experiences directly.[1] Recent work has explored how farmers' curation of their online activities may in itself be a form of care and self-care (Riley and Robertson, 2022) as farmers may use social media posts as a proxy for displaying, as well as masking, their own well-being. So too, connection via social media may enable a form of 'checking in' amongst wider networks, as well as the development of social capital (Holton et al., 2023a). Mental health organisations and support systems could more effectively utilise social media to publicise their resources (Naslund et al., 2020), offering opportunities for engagement amongst people who are often geographically isolated, without time to seek support systems, and who may be reluctant to engage in help-seeking practices (Nye et al., 2022). Alongside this, work is needed on developing and promoting the safe use of social media, especially amongst younger people working in farming.[2] Further research is also needed to explore the often hidden, and implicit, peer-to-peer support which is offered via social media and noted to be effective (see Holton et al., 2023a). It is important to recognise how this commonly interlaces with, and augments, offline

[1] See for example the use of the hashtag #AgMentalHealth during Agriculture Mental Health Awareness Week.

[2] This is a theme picked up in the farming press in recent years - https://www.fwi.co.uk/farm-life/young-farmers/opinion-social-media-lots-to-love-and-hate.

face-to-face engagements with other people working in farming.

2.4.5. Online mental health forums

In recent years, the popularity of specific online mental health forums, as distinct from social media platforms, has increased due to their ability to facilitate health and well-being support (Farmer et al., 2023). Indeed, online forums offer a quick and efficient communication method, overcoming geographical boundaries, linking distant forum-users with similar interests, and enabling collaborations between those who otherwise would not meet (Steiner et al., 2023). A unique advantage of mental health forums compared with offerings of traditional public mental health services is the composition of forums' users who share personal experiences with others who have undergone similar experiences (Kilpatrick et al., 2023). This ability to relate to the unique challenges of other forum users helps to develop trust and rapport, creating a close-knit community with a peer-led network of individuals supporting each other to overcome specific challenges (Carlisle et al., 2024). The latter is particularly important for those living in a rural context, where mental health issues are frequently stigmatized and, therefore, hidden in social debates. However, a process in which online forums lead to supporting rural residents, including farmers and their families, is still under-researched internationally. Understanding if and how rural people use online services to support their mental health and well-being is important considering the limited health and care service provision in rural locations. Indeed, further research in this area can assist in designing new interventions and support services for rural communities.

2.4.6. Tailoring interventions to different cohorts with different needs, and how to achieve this

Since we identified a gap in understanding the state of mental health and well-being amongst different groups within agricultural communities, such as young farmers, women, and children, it is unsurprising that there is limited research focused on tailoring interventions to different groups. Understanding how and why mental health and well-being varies between different groups is the foundation of knowing how different interventions could be targeted appropriately. Beyond limited suggestions, for example, that social media and other forms of digital support may best target younger audiences (Rose et al., 2023), we are not aware of studies specifically testing and comparing how the efficacy of support varies depending on target group. This is a key focus for future research.

2.4.7. Inclusivity of well-being initiatives

Further research is required into the inclusivity of well-being initiatives, including but not limited to age, gender, ethnicity, and sexuality. For example, in New Zealand, consideration of cultural factors is essential, and intervention and assessment approaches should be co-designed with target communities. Well-being interventions and assessment tools (co)designed by indigenous peoples currently exist in New Zealand (e.g. Forrest et al., 2019; Harding et al., 2021), but the number of tools based on indigenous knowledge are few compared to those based on Western knowledge and perspectives. Further research should focus on bringing together Western and indigenous knowledge in the well-being space in all countries where applicable.

2.4.8. Help-seeking strategies and behaviour

Key to assessing approaches best suited to supporting the mental health of the agricultural population is an understanding of how different cohorts make decisions related to seeking help when experiencing challenges, as well as identifying where they go for help. Existing studies have provided some insight into the cultural and behavioural factors that explain reticence to seek help among people who work in farming, particularly men (Roy et al., 2019), including stoicism, desire for independence, and mental health stigma (Bryant and Garnham, 2015; Hagen et al., 2022). Therefore, a preferred source of help across studies tends to be from close social networks of family and friends (Rudolphi et al., 2019; Shortland et al., 2023). Studies have also shown the role of structural factors in impeding help-seeking strategies, often with connections to the rurality of residence. This is particularly the case as it pertains to access to behavioural health care providers who can be lacking in rural areas, the need to travel long distances, inadequate insurance coverage for some of these services, and the inability to use telehealth services due to inadequate internet access (Nye et al., 2022). Future research also needs to determine which factors mediate the association between rurality and suicide, paying particular attention to help-seeking behaviours and access to care prior to suicide or suicide attempt.

With that said, there are a number of opportunities to deepen our understanding of help-seeking strategies and how these may vary across social, economic, and cultural contexts. Indeed, a handful of countries have been over-represented in these studies (e.g. Australia, Canada, the U.K. and the U.S.) but to what extent do these findings hold in other contexts? Another question to explore is how social policies shape the use (and role) of formal vs. informal support systems. For example, studies out of the U.S. point to farmers' preference for informal support but this could be in part explained by the limited social safety net programs and high cost of care compared to most other countries in the Global North (Becot and Inwood, 2022). Largely missing from the literature is an understanding of the role of social and physical infrastructure in the area of residence. Indeed, two studies from Australia illustrate the importance of meso-level factors in facilitating or impeding agricultural populations access to care (Kilpatrick et al., 2012; Perceval et al., 2018). Finally, particular attention needs to be paid to broadening this body of work so that it is inclusive of the heterogenous farm population (i.e. gender, age, race/ethnicity, role in household, role on the farm).

2.5. Proposition Five. Reconsider current approaches and methodologies

The existing body of research on mental health within agriculture has utilised a wide array of disciplinary approaches and methodologies. This diversity is to be celebrated for its ability to offer multiple perspectives on what is a highly complex issue. A variety of qualitative and novel approaches have allowed various facets of farming people's lived experiences to be explored in rich detail, whilst quantitative research has enabled levels of mental health to be measured (at least in some contexts). Nevertheless, there remains scope for future studies to consider more deeply how approaches such as interdisciplinarity and co-design can most effectively engage with, and provide long-term benefits to, target communities. Methodologically, there is also value in considering how quantitative approaches might be made more consistent across research studies in order to increase scalability and comparability across space and time, and how qualitative studies might make greater use of innovative methods and ethnographic approaches.

2.5.1. Measuring mental health and well-being among people in agriculture

Large-scale quantitative surveys investigating levels of health and well-being and/or suicide within agricultural populations have been conducted in some countries, for example England and Wales (RABI, 2021); France (Bossard et al., 2016) and Finland (Kallioniemi et al., 2009). However, significant knowledge gaps remain regarding levels of poor/high mental health within and across national and cultural contexts, as well as potential differences between sub-groups such as farm workers, contractors and non-farming members of farm families. Whilst it is widely accepted that mental health is an issue of concern within agriculture globally, future research creating quantitative datasets would be extremely valuable both for understanding nuances (e.g. differences between demographic groups/farm types/geographic contexts etc.), and for providing evidence that can inform interventions and act as a baseline for evaluating longitudinal change.

Existing quantitative research has used a range of standardised scales

to measure different aspects of health and well-being in farming. These include: the General Health Questionnaire (e.g. King et al., 2009); Kessler-10 (e.g. Peel et al., 2015); Patient Health Questionnaire-9 and Generalised Anxiety Disorder-7 scales (e.g. Rudolphi and Berg, 2023); EQ-5D-3L scale (e.g. Wheeler and Lobley, 2022); and Warwick Edinburgh Mental Well-being Scale (e.g. Crimes and Enticott, 2019). Whilst these are all validated measures that have been proven to be robust, their varied use makes comparisons between different study populations problematic and there may be some value in developing consensus or guidelines regarding which are most appropriate for use within agricultural research (Hagen et al., 2019). At the same time, however, it is important to avoid being overly prescriptive or triggering unhelpful debates about measurements that may detract from bigger picture questions.

2.5.2. Co-design of research methods and intervention initiatives with end user

There is a crucial need to engage with those most impacted by mental health challenges to ask about the kinds of solutions they want to see and to investigate how these solutions vary based on gender, age, race/ethnicity, role in household, and role on the farm.

2.5.3. Implementation of cross- and interdisciplinarity

Encouraging interdisciplinary research is essential for effectively addressing the mental well-being of individuals in the farming community. Drawing insights from a range of disciplines, including psychology, sociology, occupational health, and human geography, will enable researchers to take a comprehensive approach to data collection. Utilising specialised research across multiple disciplines can provide a deeper understanding of the factors that impact the mental health of people working in farming and inform evidence-based interventions.

2.5.4. Development of comprehensive research approaches to examining farming peoples' distress

Although scholars from different scientific disciplines uniformly assert that the context of work-related health outcomes matters, the most influential approaches in occupational medicine and public health still rarely consider such contexts beyond the reported and publicly available data, calculated trends, and indicators and indexes of comparable, statistically designed categories of occupational groups. These scholars attempt to explain the dramatic change in agriculture from the Global South to the Global North within the repertoire of narrow contextual determinants defined as external and internal stressors and risk factors that can impact the health and well-being of occupational groups, with a continued focus on individual risk behaviour. However, critical medical anthropologists and sociologists (Scheper-Hughes and Lock, 1987; Bourdieu et al., 1999; Kleinman et al., 1997; Ådhal, 2007; Fassin, 2007; Holmes, 2013; Wilkinson, 2005; Wilkinson and Kleinman, 2016) show in their studies that 'social forces' are embodied in the experience of pain, illness and trauma, and that individual suffering should also be discussed as an expression of socio-structural inequalities. They contend that the experience of suffering, distress, poor health, and well-being can be effectively communicated not only quantitatively, but also through thick ethnographies. This helps to encourage research participants to express uncertainty, dilemmas, worries and indecision, and to allow researchers to identify, and then pursue, inconsistencies in particular realities to gain a deeper understanding of farming peoples' experiences and local developments that could not be gained from statistical data on general trends. Ethnographically observed distress and talks about health, illness and well-being as a response to experienced uncertainties among farmers and farm labourers, for example, in response to the structural changes in agriculture and changing development orientations, are necessary to understand similarities and differences between geographical areas worldwide.

3. Conclusion

A valid body of knowledge related to the health and well-being of individuals belonging to agricultural communities has been steadily building over the last forty years. Some of this work, however, remains fragmentary and many researchers continue to work in silos. The subject is beginning to emerge as a stand-alone topic at international conferences and seminars, yet, to date, few international groups spanning all continents of the Global North have assembled to consider the issues from a geographically integrative perspective. The development of these propositions is important because any research on mental health in agriculture needs to engage with, and build upon, the existing body of work instead of reinventing the wheel. In much recent literature, there is a common line of argument that mental health challenges in agriculture are an emerging issue and that major, basic, knowledge gaps need to be filled. However, this type of argument, often from the public health world, discredits the extensive and rich body of literature already generated on mental health in agriculture, with rural social scientists having played an important role in contributing to this body of work, as our earlier discussions demonstrate. This is not to say that new research is not needed but rather that a rigorous and innovative body of work will come from engaging with the literature across time, space and language communities. This will lead to important lines of questioning around similarities and differences. These insights can then be leveraged to parse out the role of individual vs. structural level factors in shaping mental health outcomes and variations in the effectiveness of responses developed to respond to these challenges.

The research agenda presented here provides a starting point for unifying and building international understanding around health and well-being in agriculture. We cannot claim that we have been exhaustive in identifying research gaps and, indeed, are aware that we could have included more: for example around exploring the potentially beneficial effects of farming for well-being; or around the implications of mental health problems within the sector for productivity, food security, and the ability to attract and retain people into the industry in the future. And what does all this tell us about current social and economic conditions in agriculture and how they might be radically reformed in visions of the future? These are important questions that deserve consideration going forward. We are also aware that, in addition to the research discussed under our propositions, there is a substantial amount of social science concerning farm and rural populations that does not specifically focus on mental health and well-being, but which nevertheless provides key insights into the lived realities (including both hardships and joys) of farming lives. Some health and well-being research does draw on this literature to some extent, but more could be done to build on and integrate its insights in order to strengthen our understanding about the drivers, outcomes, and potential solutions to mental health challenges within the industry. Furthermore, whilst the strength of our working group stems from its relative geographical and disciplinary diversity, we recognise that our research experience and perspectives remain only partial in this respect. The field would thus greatly benefit from wider cross-national, cross-cultural and cross-disciplinary collaborative working in the future, both to help meet the gaps we have identified and to bring together diverse knowledges and perspectives in a meaningful and constructive manner.

CRediT authorship contribution statement

Caroline Nye: Writing – review & editing, Writing – original draft, Project administration, Methodology, Conceptualization. **Rebecca Wheeler:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **David Rose:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Florence Becot:** Writing – review & editing, Writing – original draft, Methodology. **Mark Holton:** Writing – review & editing, Writing – original draft, Methodology. **Duška Knežević Hočevar:** Writing – review & editing,

Writing – original draft, Methodology. **Jorie Knook:** Writing – review & editing, Writing – original draft, Methodology. **Sarah Kyle:** Writing – review & editing, Writing – original draft, Methodology. **Maria Partalidou:** Writing – review & editing, Writing – original draft, Methodology. **Mark Riley:** Writing – review & editing, Writing – original draft, Methodology. **Artur Steiner:** Writing – review & editing, Writing – original draft, Methodology. **Hannah Whitley:** Writing – review & editing, Writing – original draft, Methodology.

Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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