

## How pesticides, social isolation and other factors raise the risk of stress and mental disorders among farmers – review of scientific evidence

This evidence report will help the United Kingdom's Parliament's Environment, Food and Rural Affairs Committee learn about the current scientific evidence concerning the mental health of farmers. I am a scientist from Birkbeck, University of London, who specialises in research about occupational health, and I teach about the connection between mental disorders and work. In this report, I will summarise the results from researchers who conducted a systematic review of 167 publications which examined the mental health of farmers, referenced below. [1] The review used a gold standard method called PRISMA (the Preferred Reporting Items for Systematic Reviews and Meta-Analyses) which promotes a high-quality approach in the way that research comprehensively search for, find and extract data from published research. It is an important method in science because it helps readers assess key questions – what research has been published about a topic, what is the quality of that research, and what can be summarised from that research? This evidence report summarises the findings of that systematic review [1] to help with Parliament's inquiry into mental health in rural areas, with a focus on the mental health of farmers. Key information about the method used in the review [1]:

- The researchers [1] screened 1224 publications in 4 databases (PsycINFO, PubMed, Scopus and Google Scholar), of which 167 were eligible for inclusion in the review.
- They searched for publications about mental health, mental disorders, and some types of mental distress (e.g., depression and anxiety) concerning agricultural workers
- The researchers did not assess publications about suicide or suicidal intentions.
- The researchers selected those publications which reported data about farmers.
- The review included 13 studies from the United Kingdom, and the rest from a range of countries.
- The 167 publications included in the review covered a period from 1979 to 2019.

The researchers [1] found that the way in which research about farmers' mental health is typically conducted includes relatively good quality methods of measuring mental health, e.g.:

- 18% of studies used the Centre for Epidemiologic Studies-Depression (CES-D) measure.
- 15% of studies focused on specific mental disorders or symptoms and measured them using e.g., the Beck Depression Scale/Inventory, the Brief Symptom Inventory, or the Farming Family Stressor Scale, the Farm Stressor Inventory, all of which are good quality measures.
- 4% of studies use the General Health Questionnaire, which is a high-quality measure that includes items about psychiatric morbidity.
- Other studies used a range of good-quality measures, although a small proportion used less reliable methods such as focus groups.

Key findings from the systematic review [1] are that 20 out of 28 studies which compared farmers' mental health with that of another occupational group found that farmers have worse mental health. Some research suggested that farmers are more likely to die from stress-related conditions than people from other occupational groups, but this finding should be treated with caution without further evidence using meta-analytic methods (that is, the statistical calculation of effect sizes across

different studies). The researchers [1] concluded that there are certain risk factors – that is, things which increase the likelihood of farmers suffering from mental health problems. These include:

1. When farmers are exposed to pesticides.
2. When farmers have financial problems.
3. When farmers feel uncertain about the weather.
4. When farmers have a prior injury or physical illness.
5. When farmers lack relationships or feel lonely or socially isolated.
6. When farmers work with family members, and feel that their roles (e.g., husband, wife, parent) conflict with work-related roles.
7. When farmers find the workload heavy, hazardous, or stressful.
8. When farmers feel under time pressure.
9. When farmers are dealing with government policies or paperwork.

The researchers' findings [1] suggest that farmers can be encouraged to seek help by promoting the idea that one should not deal with mental health concerns by themselves, by improving farmers' access to mental health services, and reducing the stigma that mental health problems have in rural areas. As well, it will be helpful for:

- Parliament to recommend improved support for farmers' pesticide use in terms of education about safe pesticide, and subsidised support for safety equipment, to help farmers cope with this issue, which is a major work stressor for them.
- Parliament to recommend equipping rural GPs and community health teams with information which will, in turn, help them support farmers who are anxious or stressed about the health consequences of using pesticides (e.g., empathising with farmers concerned about the carcinogenic or other health effects of pesticides, offering quick diagnosis and treatment, offering counselling in cases where farmers' family members have had cancer or illnesses suspected to have been caused by pesticide use in the past, and giving farmers advice about monitoring their health.)
- Parliament to recommend government-subsidised social schemes aimed at farmers, including social events, online support forums and informal schemes to reduce the sense that many farmers have of being socially isolated or alone in their line of work. Parliament should consider funding initiatives which help farmers connect with each other and thus reduce social isolation e.g., a "peer buddy" or mentoring system in which a farmer is paired with another farmer to share advice, sound out ideas, and discuss stresses informally in a way that is confidential and helpful. Farmers should be able to join the scheme free of charge, and use modern technology to connect (e.g., social media, phone calls or video chats), enabling farmers who volunteer for the scheme to connect with other farmers anywhere in the United Kingdom.
- Parliament should recommend quick government responses to issues which farmers find stressful such as weather emergencies, climate-related concerns, and government regulations or bureaucracy, to reduce uncertainty – which can be a stressor.

With this knowledge about current scientific evidence, and the above recommendations, Parliament can help to protect the mental health of farmers in the United Kingdom.

## References

- [1] Daghigh Yazd S, Wheeler SA, Zuo A. (2019). Key risk factors affecting farmers' mental health: A systematic review. *International Journal of Environmental Research and Public Health*, 16(23):4849.