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Sowing seeds of awareness: a cross-sectional analysis of mental health literacy and help-seeking in Irish farmers

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Abstract

Background Farmers around the world are at risk of depression, anxiety, and suicidal ideation yet many avoid seeking help. In Ireland, farmers' mental health is a national concern, as farmers face barriers of masculine norms around help-seeking. This study aimed to examine the prevalence and relationship between mental health literacy and mental health help-seeking in the Irish farming community. It also aimed to identify if mental health literacy or mental health help-seeking differed depending on gender, age, education, health status and income level.

Methods We conducted a cross-sectional assessment of 351 Irish farmers' mental health literacy and help-seeking using validated psychometric measures: the Mental Help Seeking Intention Scale (MHSIS), the Attitudes Toward Seeking Professional Psychological Help Short Form (ATSPPH-SF), and the Multicomponent Mental Health Literacy Measure (MMHL).

Results Irish farmers' mental health literacy and help-seeking scores were interrelated. Though low, farmers' scores were comparable to the general population and higher than some European samples. Despite broadly favourable attitudes towards seeking professional mental health help, Irish farmers perceived significant barriers to accessing care and exhibited stoic health attitudes. Farmers with less education and men were particularly at risk.

Conclusion Irish farmers' stoic attitudes may be a response to their perceived lack of services. Interventions providing mental health literacy education and improving access to existing mental health services are particularly important for this population of farmers.

Keywords Health attitudes, Health literacy, Help-seeking, Rural culture, Farming, Farming community, Ireland

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Background

International evidence on the mental health of farmers indicates that they are at risk of experiencing depression, anxiety, and suicidal ideation [1–4]. For example, 88% of farmers in the U.K. under the age of 40 ranked poor mental health as their greatest challenge [5]. Farmers, however, are reluctant to seek help due to stigmatising beliefs, scepticism towards professional help, and the lack of mental health services in rural areas [6–8]. Suicide rates in rural, farming populations are consistently higher than in the general population [9–12]. In the USA, nearly twice as many male agricultural managers die by suicide, which is twice the rate of men in the general population [13]. In Ireland, the impact of suicide on farming communities has highlighted farmers' mental health as an issue of public concern [14, 15]. In this study, we examine Irish farmers' understanding of mental health and help-seeking.

Farming is a high stress occupation: farmers work an average of 50–80 h per week for low profit margins [16, 17] and deal with numerous hazards related to managing machinery or large livestock [18]. However, the farming sector is vulnerable to and reliant on external factors such as disease, extreme weather and climate change, agricultural and food production policies, and shifting market demands [4, 16, 19–24]. Furthermore, technological modernisation in farming has forced some farmers out of the profession and others to adopt new ways of working, leaving many uncertain about their continued livelihoods [25]. Because farming is so closely intertwined with the personal and family lives of farmers, it is not only an occupation but a way of life [3, 26]. Thus, the boundaries between home and working life can often become blurred resulting in poor work-life balance [27].

As a result, heavy occupational demands and uncertainty about the future of the agricultural sector may threaten some populations of farmers' wellbeing and put them at risk of psychological distress [28, 29]. While mental health issues are generally more prevalent among farmers compared to the general working population [7, 28, 30, 31], this varies across cultures. For example, while farmers in Iceland and New South Wales, Australia, have no poorer health than the general population [7, 32, 33], farmers in Europe, the UK, and Australia more broadly [8, 31, 34] have significantly poorer mental health than the general population. In addition, the stress of farming increasingly falls on the shoulders of an aging population of farmers working a declining number of farms [35].

Mental health help-seeking bridges the gap between the individual with symptoms of poor mental health, and the mental health supports available to them. Mental health help-seeking refers to the actions a person takes to acquire professional support when they are struggling with their mental health [36]. Thus, it benefits mental

health service providers by increasing successful service engagement [37] and it helps the individual by supporting them to ameliorate their psychological distress [38]. Age and gender are important correlates of help-seeking; being young and being male is associated with poorer help seeking compared to those in other age and gender categories [39–42].

While help-seeking among farmers tends to be poor [23, 43], we do not know if help-seeking patterns in the general population also play out in the farming population, as reliable psychometric measures of farmers' help seeking are scarce. Among farmers both in Ireland and internationally, traditional masculine values like stoicism and self-reliance, as well as the stigma and shame associated with mental health struggles, can prevent farmers from seeking help [43–45]. As a result, farmers will often mask deeper psychological challenges and avoid seeking help for the mental health [45–47]. In their qualitative examination of the impact on governance changes on Irish farmers' identities, Hammersley and colleagues [44] discussed the perceived barriers to help seeking including ideas of masculinity, time pressure, social pressure, and a lack of access to services. Indeed, the provision of specialist mental health services for farmers is very limited in a European context [28, 48] and a lack of adequate services may be a compounding barrier for individuals who may already be reluctant to seek help. To our knowledge, no study has used reliable psychometric measures to assess farmers' help-seeking behaviour and its relationship with demographic factors, such as gender and age, especially in an Irish context.

One important attribute associated with help-seeking is mental health literacy (MHL) [49, 50]. MHL refers to being competent and informed about mental health disorders and the ways to support and reduce them [51]. The recognition of one's own symptoms is a key aspect of help-seeking, therefore MHL is both closely related to and necessary for successful help-seeking for mental health difficulties [50]. In the workplace, MHL promotes helping behaviour and has the potential to ameliorate worker burnout and to promote positive mental wellbeing [52, 53]. In general, men and older people have lower MHL compared to women and younger people [54–56]. In Ireland specifically, being a man, being young, and living rurally are all associated with lower MHL [57, 58]. A recent systematic review has noted that in male-dominated industries, workplace interventions that have the strongest evidence of intervention effects were related to mental health literacy and help-seeking intentions [59].

Understanding farmers' MHL is particularly important as people in rural communities often hold stigmatising attitudes towards mental health issues and help seeking [60], and interventions designed to encourage farmers'

help seeking by improving their MHL have been successful (e.g. Morgaine et al. [52]; Perceval et al. [61]; see Younker & Radunovich [28], for a recent review). Health literacy initiatives targeting Irish farmers have also been successful, such as the “Farmers have Hearts” programme [62] along with interventions to enhance mental health awareness and support like the “On Feirm Ground” mental health training programme for farm advisors [63]. Similar to help-seeking, while some farmers describe their own MHL as low [64], the assessment of farmers’ MHL using validated psychometric measures is lacking. To our knowledge, no study has examined European farmers’ MHL, or examined cross-sectional demographic differences in MHL in the Irish farming community.

Given the importance of help seeking and MHL for positive mental health, and the limited quantitative evidence on farmers’ help seeking and MHL, the current study aims to address this gap by examining two research questions in a sample of Irish Farmers:

- 1) What is the prevalence of and relationship between help-seeking and MHL?
- 2) How are help-seeking and MHL associated with demographic factors of gender, age, education, health status, and income-level?

Method

Participants

We employed convenience sampling methods to recruit adult farmers of any type (e.g. dairy, beef, sheep, pig, tillage, organic) and of any gender. Part-time and full-time farmers, and farmers who worked other jobs off-farm were eligible to participate. We used the online calculator provided by openepi.com [65]. We determined that 271 participants would be sufficient based on our use of cross-sectional design, our desired confidence intervals (90%), and the total national sample of farmers ($N=135,037$) [66].

Measures and instrumentation

Participants completed an 81-item anonymous survey that took approximately 15 to 20 min. In this article we describe participant outcomes in help-seeking intentions, attitudes towards help-seeking, and MHL, however the overarching survey included other complementary outcome variables that are described elsewhere [67, 68]. The survey was pilot tested with 10 Irish farmers with characteristics representative of the national farming population in terms of gender and age to establish understanding and clarity of the survey and time taken to complete the survey. No changes were made following the piloting stage.

Participant demographics and health

Participants provided their age, gender, relationship status, education, number of children and whether they lived alone. Information on primary farm type (e.g. crop, dairy, beef), land size, and overall net income and farm-specific net income was collected. Participants indicated if they had any mental health, physical health and/or alcohol/ substance use issues via self-report items developed by the authors. A dichotomous variable was used for analyses. If participants had a physical, mental health or substance use issue, this was coded as ‘yes’ or ‘no’ for each of the health domains. Interference of mental health, physical health and/or substance/alcohol use symptoms with everyday functioning was reported via 3-items adapted from the Short Form Health Survey-12 [69]. Scores on this scale ranged from 1= “0 times” to 6= “20–30 times”. Higher scores indicated higher health related impact on daily functioning. A mean score was calculated across the 3 domains (physical, mental and substance use health). Higher scores indicated poorer health-related daily functioning. Cronbach’s alpha for the scale was 0.79.

Past help-seeking behaviour

Information on past mental health help-seeking behaviour was collected. Participants reported if they had previously sought help for their mental health from one or more of the following sources: spouse, family member, close friend, neighbour, colleague, spiritual leader (e.g. priest), member of local sporting club (e.g. GAA club), local politician, general practitioner (GP), psychiatrist, counselling psychologist, psychotherapist or any other mental health professional. Participants could include other sources which were not listed, or select “not applicable” if they had not sought help for their mental health.

Mental health help-seeking

To measure mental health help-seeking we employed the Attitudes Toward Seeking Professional Psychological Help Short Form (ATSPPH-SF) [70]. The ATSPPH-SF is a 10-item self-report measure of the perceived need for seeking psychological help, level of trust with mental health professionals and concerns about stigma against seeking help. Respondents indicate their agreement on a 4-point Likert scale ranging from 0= “disagree”, to 3= “agree”. Items 2, 4, 8, 9 and 10 are reverse coded. Scores are then summed together, with a score of >20 indicating a positive attitude toward seeking professional help. Scores range from 0 to 30. The ATSPPH-SF has demonstrated construct validity and reliability (e.g. $\alpha=0.84$ [71]), when employed with the general population, primary care patients [72] and college students [71]. Cronbach’s alpha for the current scale was 0.77.

Mental health help-seeking intention

We measured mental health help-seeking intention via the three-item Mental Help Seeking Intention Scale (MHSIS) [73]. The MHSIS is a self-report measure designed to assess respondents' intention to seek help from a mental health professional if they had a mental health concern. Participants rated their degree of intention using a 6-point Likert scale where 1= "extremely unlikely", and 7= "extremely likely". Participant scores are summed and the mean is calculated. Scores range from 1 to 7 with a higher score indicating higher help-seeking intention. The MHSIS has demonstrated predictive validity [74] and reliability (e.g. $\alpha=0.94$ [74]) when employed with people experiencing mental health issues [74, 75] and the general population [76]. Cronbach's alpha for the scale in the current study was 0.95.

Mental health literacy & knowledge of health services

The Multicomponent Mental Health Literacy Measure (MMHL) [77] is a 26-item self-report measure of participants' knowledge and attitudes about mental health that support the recognition, management and prevention of poor mental health. For items 1–22, on mental health knowledge and beliefs, participants indicate their agreement on a 6-point Likert scale where 1= "strongly disagree", 5= "strongly agree" and 6= "don't know". Items 1–12 are assigned a score of 1 where participants indicate that they agree or strongly agree, and 0 if they disagree or strongly disagree, are neutral or don't know. Items 13–22 are assigned a score of 1 if they indicate they disagree or strongly disagree, and the other responses are coded as 0. For items 23–26, which refer to resource-oriented mental health literacy, participants respond with "yes" or "no", and these items are scored as 1 and 0 accordingly. A second variable, 'Knowledge of mental health services' was computed by summing items 23–26. Higher scores are indicative of greater mental health literacy. The MMHL scale has demonstrated construct [77] and convergent validity [78] when employed with general populations [77]. Cronbach's alpha for the scale in the current study was 0.80.

Procedure and data collection

Before commencing data collection, we obtained research ethics approval from the Dublin City University research ethics committee. The self-report survey, and participant study information and consent forms were adapted for both online and in-person administration. Consent, study information and questionnaire items were programmed to Qualtrics survey software (Qualtrics, Provo, UT) and the online survey was distributed to participants via an anonymous web link. Study information was advertised through social media and word of mouth. Supplemental recruitment took place at local farming events and farm

safety classes organised by Teagasc, a national farming organisation, where farmers were approached by the researchers and invited to participate. Data was collected from 12th July to 4th November 2022.

The survey was available online on Qualtrics and data was downloaded and exported to IBM SPSS 28 (IBM SPSS Statistics for Mac). A total of 118 hard copy surveys were completed in person and entered into Qualtrics. In addition, we obtained 513 online survey responses, 280 of which were removed due to insufficient response (i.e. solely opening the survey or only completing demographic information). Thus, 351 participants were included in analyses.

Statistical analysis

Little's missing completely at random test was conducted on all measures (MCAR) [79]. Except for net income and farm net income, all data was missing at random ($p>.05$) and predicted values were obtained using the Expectation-Maximisation technique [80]. To assess participant characteristics, we employed descriptive analysis. Shapiro–Wilk's tests signalled that data for all variables did not follow normal distribution ($p<.05$). An alpha level of 0.05 was used for all analyses. Spearman's rank order correlation analyses tested the relationship between MMHL, ATSPPH, MHSI and demographic variables (age, health functioning, farm size, farm net income, net income). The strength of the relationship was classified as small (0.10), medium (0.30) and large (0.50) [81]. Mann Whitney *U*-tests (gender, living alone, physical/ mental/ substance use health issues, farming full/ part-time and past help-seeking behaviour) and Kruskal Wallis tests with post-hoc pairwise comparisons (education level) were used to assess relationships between demographic characteristics, MMHL, ATSPPH and MHSI scales. Effect size *r* was classified as 0.10=small, 0.30=medium and 0.50=large effect size [81].

Results

The participants' mean age was 36 years (36.0 ± 13.7 , range=18–78). Demographic and farm-specific information can be viewed in Table 1. Participants were mainly male (76.4%) and married or in a relationship (67.2, $n=236$). Most were part-time farmers (64.7%), with third level education (i.e. higher education [e.g. university] after high school) (59.5%). A large proportion were employed in full-time off-farm roles (41.9%). Many farms were ≤ 100 acres (50.4%, $n=177$, 148.8 ± 240.2) and mainly run by the farmer and family (57.5%). Most reported a net farm income below €40,000 (63.3%, $n=222$, 34713.8 ± 126059.0) while one-fifth did not report their net farm income (19.7%). Total net income from the farm and off-farm employment was below €40,000 for

Table 1 Demographic and farming- specific information of participants ($N=351$)

Variable	Category	% (n)
Gender	Male	76.4% (268)
	Female	23.6% (83)
Relationship Status	Single	33.0% (116)
	In a relationship	29.1% (102)
	Married	38.2% (134)
Education	Primary School ^a	0.6% (2)
	Lower Secondary ^b	5.7% (20)
	Upper Secondary ^c	21.1% (74)
	Third level ^d	59.5% (209)
	Post-graduate ^e	13.1% (46)
Farm employment	Part-time	64.7% (227)
	Full-time	35.3% (124)
Principal farm type	Dairy	34.5% (121)
	Livestock & crop	7.7% (27)
	Tillage	2.6% (9)
	Beef	34.2% (120)
	Sheep	9.4% (33)
	Other	11.6% (41)

^aAges approximately 5–12 years, also known as elementary school internationally. ^bAges approximately 12–15 years culminating in completing the Junior/ Inter- Certificate. ^cAges approximately 15–18 years culminating in completing the Leaving Certificate. ^dAges > 18 years, completion of higher education like university etc. ^eSpecialised education following completion of an undergraduate degree

%; Percentage; n; Number of participants

41.6% ($n=146$, 44871.8 ± 44767.3) of participants while 18.8% did not report their total net income.

Past help-seeking behaviour & knowledge of mental health supports

More than 40% of participants (40.5%, $n=142$) reported that they previously sought help for their mental health from one or more sources such as a spouse (15.7%, $n=55$), friend (14.5%, $n=51$), family member (8.5%, $n=30$), neighbour (1.4%, $n=5$), colleague (1.4%, $n=5$), spiritual leader (1.4%, $n=5$), local sporting club (0.9%, $n=3$) or a mental health professional (21.1%, $n=74$). Sources of professional mental health support included general practitioner (12.8%, $n=45$), counselling psychologist (10.3%, $n=36$), psychiatrist (4.0%, $n=14$) psychotherapist (3.4%, $n=12$) or other mental health professionals (2.0%, $n=7$). Most participants reported that they know where to go to receive mental health services (75.2%, $n=264$), how to get the number of a suicide prevention hotline (75.8%, $n=266$) and where to get useful information about mental illness (78.3%, $n=275$). Over half of participants did not know how to contact a mental health clinic in their area (53.8%, $n=189$).

Mental health help-seeking

Participant responses to the ATSPPH scale are displayed in Table 2. The average ATSPPH scale score was 18.7 ($18.7.1 \pm 5.7$, range: 0–30) indicating overall negative (below 20) attitudes toward help-seeking. Females reported a more positive attitude toward seeking professional psychological help ($Mdn=20.0$), than males ($Mdn=19.0$, $U=13386.0$, $p=.005$, $r=.15$). A statistically significant difference in ATSPPH and education level was

Table 2 Participant responses to the attitudes toward seeking professional psychological help scale ($N=351$)

Statement	Disagree	Partly disagree	Partly agree	Agree
1. If I believed I was having a mental breakdown, my first inclination would be to get professional attention	14.5% (51)	14.2% (50)	40.2% (141)	31.1% (109)
2. The idea of talking about problems with a psychologist strikes me as a poor way to get rid of emotional conflicts	39.0% (137)	26.2% (92)	23.9% (84)	10.8% (38)
3. If I were experiencing a serious emotional crisis at this point in my life, I would be confident that I could find relief in psychotherapy	12.3% (43)	17.1% (60)	42.7% (150)	27.9% (98)
4. There is something admirable in the attitude of a person who is willing to cope with his or her conflicts and fears without resorting to professional help	29.1% (102)	29.1% (102)	23.1% (81)	18.8% (66)
5. I would want to get psychological help if I were worried or upset for a long period of time	8.0% (28)	11.1% (39)	40.2% (141)	40.7% (143)
6. I might want to have psychological counselling in the future	17.7% (62)	17.7% (62)	38.7% (136)	25.9% (91)
7. A person with an emotional problem is not likely to solve it alone; he or she is likely to solve it with professional help	8.5% (30)	15.7% (55)	41.0% (144)	34.8% (122)
8. Considering the time and expenses involved in psychotherapy, it would have doubtful value for a person like me	25.1% (88)	32.2% (113)	28.2% (99)	14.5% (51)
9. A person should work out his or her own problems; getting psychological counselling would be a last resort	36.8% (129)	33.3% (117)	18.5% (65)	11.4% (40)
10. Personal and emotional troubles, like many things, tend to work out by themselves	30.2% (106)	31.9% (112)	27.6% (97)	10.3% (36)

%; Percentage; (x); Number of participants

observed, ($\chi^2=9.76, p=.045$). Participants with third level ($\chi^2=-30.94, p=.024, r=-.12$) or postgraduate ($\chi^2=-40.77, p=.032, r=-.11$) education recorded higher median scores (both 20.0), than those with leaving certificate level education ($Mdn=16.5$). There was a small, negative association between ATSPPH and health functioning, ($r=-.13, p=.013$). Participants who previously sought help for their mental health reported more positive ATSPPH ($Mdn=20.0$), than those who had not previously sought help ($Mdn=19.0, U=16969.0, p=.022, r=.12$). There was a medium, positive association between ATSPPH and knowledge of mental health services, ($r=.27, p<.001$). No other significant differences were observed for age, relationship status, farm size, whether farming full/ part-time, income, or health- related characteristics.

Mental health help-seeking intention (MHSI)

The average MHSIS score was 13.1 (13.1 ± 5.2 , range: 3–21). Responses to the MHSIS are displayed in Table 3. There was a small, positive association between mental health help-seeking intention (MHSI) and age, ($r=.11, p=.049$). There was a small, negative association between MHSI and health functioning, ($r=-.17, p=.002$). Participants with mental health issues reported lower help- seeking intention ($Mdn=13.0$), than those without ($Mdn=14.0, U=13063.0, p=.036, r=-.11$). Participants with substance use issues reported lower help-seeking intention ($Mdn=9.5$), than those without ($Mdn=13.0, U=989.0, p=.023, r=-.12$). Participants who previously sought help for their mental health reported higher help-seeking intention ($Mdn=13.0$), than those who had not previously sought help ($Mdn=13.0, U=16876.0, p=.028, r=.12$). There was a small, positive association between MHSI and total net income, ($r=.16, p=.006$). No other significant differences were observed for gender, relationship status, farm size, farm income, or health- related characteristics ($p>.05$).

Mental health literacy

Table 4 presents the MMHLS results. The average total MMHLS score among participants was 17.8 (17.8 ± 5.3 , range=0–26). Female participants ($Mdn=20.0$) had higher MMHLS scores than males ($Mdn=18.0$;

$U=13737.0, p<.001, r=.17$). A statistically significant difference between MMHLS scores and education level was observed, ($\chi^2=33.8, p<.001$). Participants with third level education recorded a significantly higher median ($Mdn=20.0$) than those with junior certificate ($Mdn=14.0; \chi^2=-80.3, p=.007, r=-.18$) or leaving certificate level education ($Mdn=16.0; \chi^2=-64.8, p<.001, r=-.25$). Participants with postgraduate education recorded a significantly higher median score ($Mdn=20.0$) than those with junior certificate ($Mdn=14.0; \chi^2=-85.6, p=.016, r=-.17$) or leaving certificate level education ($Mdn=16.0; \chi^2=-70.1, p=.002, r=-.20$). Participants who had previously sought help for their mental health ($Mdn=20.0$) had higher MMHLS scores than participants who had not previously sought mental health help ($Mdn=18.0, U=16719.5, p=.043, r=.11$). No other significant differences were observed for gender, relationship status, age, farm size, farm net income, total net income, farming full or part-time, or health- related characteristics ($p>.05$).

The association between mental health literacy, help-seeking intention, and attitudes towards seeking professional psychological help

There was a medium, positive association between mental health literacy and mental health help- seeking intention ($r=.38, p<.001$) (Table 5). There was a medium, positive association between mental health literacy and attitudes towards seeking professional psychological help ($r=.48, p<.001$). There was a large positive association between mental health help-seeking intentions and attitudes towards seeking professional psychological help ($r=.62, p<.001$).

Discussion

In this study of Irish farmers, we examined two research questions: (1) what is the prevalence of and relationship between help-seeking and mental health literacy, and (2) how are help-seeking and MHL associated with demographic factors of gender, education, health, age, and income-level. Primarily, we identified that farmers had moderately low help-seeking and mental health literacy, with generally negative attitudes towards seeking help and low intentions to seek help. These low results were

Table 3 Participant responses to the mental help seeking intention scale ($N=351$)

Statement	1 Extremely Unlikely	2	3	4	5	6	7 Extreme- ly likely
1. If I had a mental health concern, I would INTEND to seek help from a mental health professional	7.7% (27)	8.8% (31)	14.0% (49)	24.5% (86)	17.4% (61)	11.1% (39)	16.5% (58)
2. If I had a mental health concern, I would TRY to seek help from a mental health professional	7.4% (26)	9.1% (32)	13.1% (46)	25.9% (91)	17.4% (61)	10.8% (38)	16.2% (57)
3. If I had a mental health concern, I would PLAN to seek help from a mental health professional	8.3% (29)	10.5% (37)	11.7% (41)	21.7% (76)	18.5% (65)	12.0% (42)	17.4% (61)

%; Percentage; (x); Number of participants

Table 4 Participant responses to the multicomponent mental health literacy scale (N = 351)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Don't know
1. Counselling is a useful treatment for depression	2.0% (7)	3.4% (12)	16.5% (58)	45.9% (161)	25.6% (90)	6.6% (23)
2. A person with schizophrenia may see things that are not really there	3.4% (12)	1.7% (6)	14.5% (51)	39.0% (137)	24.5% (86)	16.8% (59)
3. Early diagnosis of a mental illness can improve chances of getting better	1.7% (6)	0.9% (3)	8.0% (28)	46.2% (162)	39.3% (138)	4.0% (14)
4. Attending peer support groups helps recovery from mental illness	2.0% (7)	3.7% (13)	17.7% (62)	45.0% (158)	21.9% (77)	9.7% (34)
5. Unexplained physical pain or fatigue can be a sign of depression	3.7% (13)	4.6% (16)	17.1% (60)	45.6% (160)	16.5% (58)	12.5% (44)
6. Cognitive behavioural therapy can change the way a person thinks and reacts to stress	1.4% (5)	2.3% (8)	16.5% (58)	42.5% (149)	20.5% (72)	16.8% (59)
7. A person with bipolar disorder may show a dramatic change in mood	0.9% (3)	1.4% (5)	7.1% (25)	39.3% (138)	43.3% (152)	8.0% (28)
8. Taking prescribed medications for mental illness is effective	4.6% (16)	9.1% (32)	22.8% (80)	37.9% (133)	15.7% (55)	10.0% (35)
9. When a person stops taking care of his or her appearance, it may be a sign of depression	2.8% (10)	5.1% (18)	14.5% (51)	52.7% (185)	17.9% (63)	6.8% (24)
10. Drinking alcohol makes symptoms of mental illness worse	2.3% (8)	2.0% (7)	6.6% (23)	46.7% (164)	37.6% (132)	4.8% (17)
11. A person with mental illness can receive treatment in a community setting	1.7% (6)	5.7% (20)	16.0% (56)	45.6% (160)	16.0% (56)	15.1% (53)
12. A person with anxiety disorders has excessive anxiousness or fear	2.0% (7)	0.9% (3)	6.8% (24)	53.3% (187)	28.8% (101)	8.3% (29)
13. A highly religious/ spiritual person does not develop mental illnesses	48.7% (171)	34.5% (121)	5.4% (19)	3.7% (13)	2.8% (10)	4.8% (17)
14. Depression is a sign of personal weakness	49.3% (173)	31.1% (109)	7.7% (27)	4.0% (14)	4.6% (16)	3.4% (12)
15. Mental illness is a short-term disorder	33.0% (116)	38.7% (136)	14.2% (50)	4.6% (16)	3.1% (11)	6.3% (22)
16. Recovery from mental illness is mostly dependent on chance or fate	37.9% (133)	39.9% (140)	11.1% (39)	4.8% (17)	2.0% (7)	4.3% (15)
17. A person with depression should not be asked if he or she has thoughts of suicide	21.7% (76)	21.7% (76)	29.3% (103)	10.8% (38)	7.7% (27)	8.8% (31)
18. Poor parenting causes schizophrenia	34.8% (122)	21.7% (76)	20.5% (72)	4.6% (16)	4.3% (15)	14.2% (50)
19. Mental illness will improve with time, even without treatment	27.1% (95)	40.7% (143)	16.5% (58)	8.0% (28)	1.7% (6)	6.0% (21)
20. Recovering from mental illness is the same as being cured	21.7% (76)	36.8% (129)	21.9% (77)	8.5% (30)	3.4% (12)	7.7% (27)
21. A person can stop hoarding whenever he/ she wants to	20.8% (73)	30.8% (108)	22.8% (80)	8.3% (29)	4.0% (14)	13.4% (47)
22. A person with depression will get better on his or on her own without treatment	24.8% (87)	44.7% (157)	17.1% (60)	4.6% (16)	3.1% (11)	5.7% (20)
23. I know where to go to receive mental health services	Yes 75.2% (264)	No 24.8% (87)				
24. I know how to get the number of a suicide prevention hotline	75.8% (266)	24.2% (61)				
25. I know where to get useful information about mental illness	78.3% (275)	21.7% (76)				
26. I know how to contact a mental health clinic in my area	46.2% (162)	53.8% (189)				

*%; Percentage; (x); Number of participants

partly driven by farmers' reports of significant barriers to accessing care and endorsement of stoic responses to health issues. Farmers with less intention to seek mental health help and more negative attitudes towards professional help also had lower mental health literacy. Education and gender were important demographic variables: those without a third-level (e.g. university) education had

particularly low mental health literacy and help seeking, while men had lower MHL and more negative attitudes towards professional help. Additionally, farmers' assessment of their own health is important to their health seeking: those with high health functioning or no history of help seeking had lower help-seeking. Additional risk factors for lower help seeking intentions specifically were

Table 5 Correlation results between scales

	ATSPPH			MHSIS		MMHL	
	Mean ± SD	p	r	p	r	p	r
ATSPPH	18.7 ± 5.7	-	-	< 0.01	0.62	< 0.001	0.48
MHSIS	13.1 ± 5.2	< 0.01	0.62	-	-	< 0.001	0.38
MMHL	17.8 ± 5.3	< 0.001	0.48	< 0.001	0.38	-	-

ATSPPH: Attitudes Toward Seeking Professional Psychological Help; MHSIS: Mental Help Seeking Intention Scale; MMHL: Multicomponent Mental Health Literacy Measure; SD: Standard Deviation; r: Spearman rho value; p: Statistical significance

younger age, lower-income, and mental health or substance issues.

Given the novel use of our quantitative measures in farming populations, we identified that Irish farmers' levels of help seeking and MHL were broadly lower than many others recorded in non-farming populations, with the important exception of their attitudes towards help seeking. Irish Farmers' help-seeking intention scores (13.1) were below those recorded in other groups that face significant mental health risks, such as college students (14.53) [82] and LGBTQ+people (15.37) [83] and closer to racial minority members (13.41) [84]. Farmers' MHL was lower (17.8) than a national Australian sample (18.9) [85], and a sample of U.S. public-sector workers (19.3) [86]. These generally low levels of MHHS and MHL further verify much of the qualitative work on farmers that describes self-reliance and resistance to help-seeking [43–45]. Farmers' attitudes towards seeking professional help were also negative (18.7) and fell short of Fischer and Farina's [70] threshold of 20. However, Coppens and colleagues [87] identified a similar level (18.4) in the general Irish population specifically, and a lower average across Europe (17.4). While ours is not a representative sample and these scores aren't strictly comparable, this is an optimistic finding considering common stereotypes of Irish farmers compared to Irish urbanites [88]. Furthermore, Irish farmers' MHL and both measures of MHHS were strongly associated, further supporting the importance of mental health literacy to help-seeking [50]. This is especially important for farmers considering their generally higher risk of mental health challenges [1] and lower help-seeking intentions [43]. Therefore, to aid prevention and early intervention, policy makers should focus on enhancing mental health literacy across the community to empower them to take action for improved mental health [51].

However, we identified further nuance in farmers' responses to all three scales when interpreted together; they are not necessarily opposed to seeking help or hold negative views of mental illness, but may instead perceive significant barriers to accessing care and endorse stoic responses to health issues. For example, less than 6% of farmers disagree that counselling is a useful treatment for depression, or that peer support groups help recovery from mental illness, compared to the over 60% who agree

with both. Similarly, over 70% of participants reported that their first inclination on experiencing a mental breakdown would be to seek professional help. While these responses and others indicate a largely healthy view of help-seeking, farmers reported significant barriers to accessing mental health: over one fifth of farmers did not know where to receive mental health services, find a suicide prevention hotline, and access useful information about mental illness. Even more, over half of farmers did not know how to contact a mental health clinic in their area. A lack of mental health services in rural areas may be contributing to this issue [89]. Nearly 43% of farmers reported that considering the time and expenses, psychotherapy would not be beneficial. In this light, it is not surprising that nearly the same number of farmers (42%) agreed that it was admirable to cope without seeking professional help. Facing a lack of resources and mental health support, farmers' stoic attitudes may be better understood as strategies for resilience and survival [45]. This pattern is also evident in farmers' history of help-seeking. While two-fifths (40%) of farmers had previously sought help for mental health, half of these (19%) relied on non-professional help (such as from friends, family members, and spouses) alone. Farmers are seeking help as much from their families and communities as from professional avenues, yet families may not be equipped to provide support for mental distress and might suffer vicariously as a result [3]. Together, these results imply that while interventions encouraging MHL and MHHS are important for Irish farmers, those which provide more accessible services, include family and community members, help educate farmers about existing services, or target farmers from demographic groups that face more dramatic barriers may be the most impactful. Recent research [89] has highlighted this need, recommending that future MHL and help-seeking interventions be community based and specifically tailored to farmers. By adopting a farm-centric approach, MHL and help-seeking interventions can help facilitate access between farmers and professional services. Furthermore, mental health service provision should prioritise farmers occupational and cultural needs at its core [89]. Integrated approaches to workplace mental health interventions are recommended [90]. Thus, it is critical for policy makers and key decision makers in Irish agriculture to finance

and support mental health strategies that address not only individual-directed interventions, but also systemic organisational challenges faced by Irish farmers [90].

We identified that education was the most important demographic factor in farmers' MHHS and MHL, being the only factor associated with all three scales. Farmers without third level education had significantly lower mental health literacy and held more negative attitudes towards seeking professional help than those with a third level or postgraduate education. For example, while farmers with third-level education of some kind reported relatively moderate (20) attitudes towards MHHS, those with less education reported significantly more negative attitudes (16.5). This relationship is concerning, considering that people with lower levels of education can face decreased health-related quality of life [91], leading to health concerns that necessitate help-seeking. Our results indicate the potential importance of mental-health literacy training in interventions designed to promote farmers' help-seeking, specifically towards seeking professional help. We advise that in order to target more at-risk groups, such interventions should be made accessible for groups with less formal education such as through community events (see Nye et al. [92]) like farm walks, discussion groups, and agricultural shows to target groups at greater risk of avoiding seeking help.

We identified that gender was also an important demographic factor: men have lower mental health literacy and have more negative attitudes towards help seeking than women. Our results broadly illustrate that Irish farmers demonstrate familiar gendered patterns of mental health literacy and help-seeking observed in other populations (e.g. Lee et al., [54]; Sagar-Ouriaghli et al., [39]). For Irish men specifically, traditional masculine norms around resisting change [93] as well as the stigma against mental illness [44] may both decrease men's understanding of their own mental health experience (an important part of mental health literacy) and negatively influence men's attitudes towards seeking professional help. However, we also observed that all genders had similar help-seeking intentions. This homogeneity is consistent with farming populations in the UK, where women and men share very similar help-seeking behaviour [92]. Effectively, the heavy demands of farming could limit farmers' intentions to seek help regardless of their gender. This complex relationship between gender and help-seeking in Irish farmers merits further investigation of potential moderating factors such as workload or traditional gender norms. Based on these findings, we recommend that cognitive interventions (such as those targeting self-beliefs [94]) may be best suited to improve men's literacy and attitudes towards seeking and receiving professional help.

Irish farmers' self-assessment of their own health was associated with MHHS alone. Primarily, farmers who

described good health functioning or no history of help seeking had lower help-seeking intentions and attitudes, while farmers with mental health and substance use issues reported lower help-seeking intentions. Effectively, farmers with poorer health *and* farmers who feel healthier are less likely to seek help. This finding is especially concerning as it further implies Irish farmers' widespread endorsement of stoic and self-reliant values [44, 45]. These beliefs could help explain the inverse relationship that health functioning and mental health/substance use each have with help-seeking. From this standpoint, even if farmers become aware that they are suffering from mental health challenges, they may face pressure to minimize the impact of these challenges on their life and overall functioning [43]. Lastly, we identified familiar risk factors of age and income; younger (e.g. Biddle, et al., [40]; Salaheddin et al., [42]) and lower-income (e.g. Cauce et al., [95]) farmers had lower intentions to seek help. We conclude that those most at-risk of avoiding help-seeking, and those most in need of intervention, are farmers who have never sought help before, farmers with mental or substance use issues, as well as younger and lower income farmers. We recommend that interventions focused on framing help-seeking as preventative [96] or as a strength-based rather than ameliorative action, may be particularly accessible and suited to Irish farmers. This can be particularly beneficial in men, as demonstrated in a recent systematic review whereby content framed around positive traits like strength and responsibility improved help-seeking behaviours [39].

Limitations

Our findings and their implications should be considered with respect to the limitations of our study. First, people who identified as farmers self-selected into our survey which impacts our prevalence assessment. Second, our sample size of 351 should be understood as representative at a 5% margin of error and 90% confidence interval alone and not as demographically representative of the population of Irish farmers. Third, our findings connecting help seeking and MHL with various demographic factors should be interpreted as correlational only (i.e., cannot infer causality) as we utilised cross-sectional analysis. Finally, we did not complete comparisons between online and in-person data collection. Thus, we interpret our results as illustrating broad patterns in our population but not proof of the social processes and attitudes that shape farmers' help-seeking.

Conclusion

This study identified that Irish farmers had broadly negative attitudes towards seeking help, low intentions to seek help, and low mental health literacy. Specifically, despite most farmers' otherwise positive views of mental health

help-seeking, they also report significant barriers in accessing mental health help (over half do not know how to access a mental health clinic in their area) and endorse stoic health attitudes. Even more, Irish farmers with lower mental health literacy had worse attitudes towards, and lower intentions to, engage in help seeking. Consistent with findings in other populations, this relationship between literacy and help seeking is characterized by inequalities across social categories of gender, education, income, and health. Farmers who were men or had less education had lower mental health literacy and held less favourable views of help seeking. There is a more complex relationship between farmers' health self-assessments and their help-seeking; farmers with mental health and substance use issues *and* farmers who felt healthier were less likely to seek help. These findings are consistent with work on social norms of stoicism and strength endorsed by Irish men and rural populations of all genders, and merit further investigation. We strongly recommend that interventions promoting farmers' help-seeking focus on mental health literacy and specifically target groups with lower help-seeking such as lower-income populations, men, and those with mental health/substance use issues.

Author contributions

SOC: Writing – review & editing, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. ADOH: Resources, Writing – review & editing. JF: Visualization, Writing – original draft, Writing – review & editing. BOS: Writing – review & editing, Writing – original draft. JM: Investigation, Resources, Writing – review & editing. SOK: Writing – review & editing, Project administration. JF: Visualization, Writing – original draft, Writing – review & editing. SM: Investigation, Data curation, Formal analysis, Writing – review & editing.

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Data availability

Data will be made available on request.

Declarations

Ethical approval and consent to participate

Ethical approval was granted by the Dublin City University Research Ethics Committee (DCUREC/2022/107) and informed consent was provided prior to completion of the survey.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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