

STRESS AMONG FINNISH FARM ENTREPRENEURS

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Abstract: The aims were to examine the prevalence of stress among Finnish full-time farm entrepreneurs in 2004 ($n = 1,182$) and to compare the results with those for the general working population in 2003. The second aim was to analyze which factors were associated with the prevalence of stress. A stratified random sample of farm entrepreneurs gathered from the farm register was surveyed using computer-assisted telephone interviews. A binary logistic regression model was used to analyze the association with background factors. One third (34%) of the examined farmers had experienced stress. This amount was lower than among the general working population (44%). The most common factors associated with farmers' stress were problems in social family relationships and mental support. Physical factors such as the strenuousness of agricultural work, illness and a low estimation of their own working ability, were also related to stress. Increased stress was also associated with economic problems. Health and extension services should pay special attention to encouraging farm entrepreneurs to maintain their social relationships. The relatively low level of stress observed may indicate that those who have continued within the agricultural sector have the psychological capacity to deal with stressful situations.

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INTRODUCTION

Finland has experienced a rapid structural change in the agricultural sector since 1995 when the country joined the European Union (EU). During 1995–2004, a quarter (26%) of Finnish farms ceased agricultural production [16]. In addition, other processes have occurred in rural villages such as a decline in communality [13] and changes in rural people's conception of the family from family-centred towards more individual views [10, 13]. These changes may have an association with the level of stress among farmers. Stress is usually described as a developing conflict between the possibilities or demands of the environment and a person's expectations, resources and capacities [8, 9].

Previous research results concerning the prevalence of stress among farmers have been variable, and even ambiguous. A survey among farmers in South-West England indicated that 35% of the respondents experienced stress [3], whereas a relatively lower prevalence of stress symptoms, 18% for men and 11% for women, was reported among Canadian farmers [24]. However, in a study by Walker & Walker [30], Canadian farmers had relatively more stress symptoms compared with an urban sample. The level of stress has followed a decreasing trend since 1997 among both farmers and salary earners in Finland. Follow-up studies of the Finnish working population indicated that in 1997, 43% of farm entrepreneurs ($n = 166$) had some, quite a lot, or a great deal of stress [18], while in 2006 this figure was 30% ($n = 75$) [17]. However, in 1997, more than

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a half (53%) of the farmers felt themselves to have quite a lot or very many possibilities to control their work, while in 2006 only one third (32%) answered similarly [12]. Furthermore, Saarni *et al.* [21] compared working ability, subjective quality of life and health-related quality of life among Finnish salary-earners, entrepreneurs and farmers. According to the results of that study, farmers had the lowest rates in all factors measured.

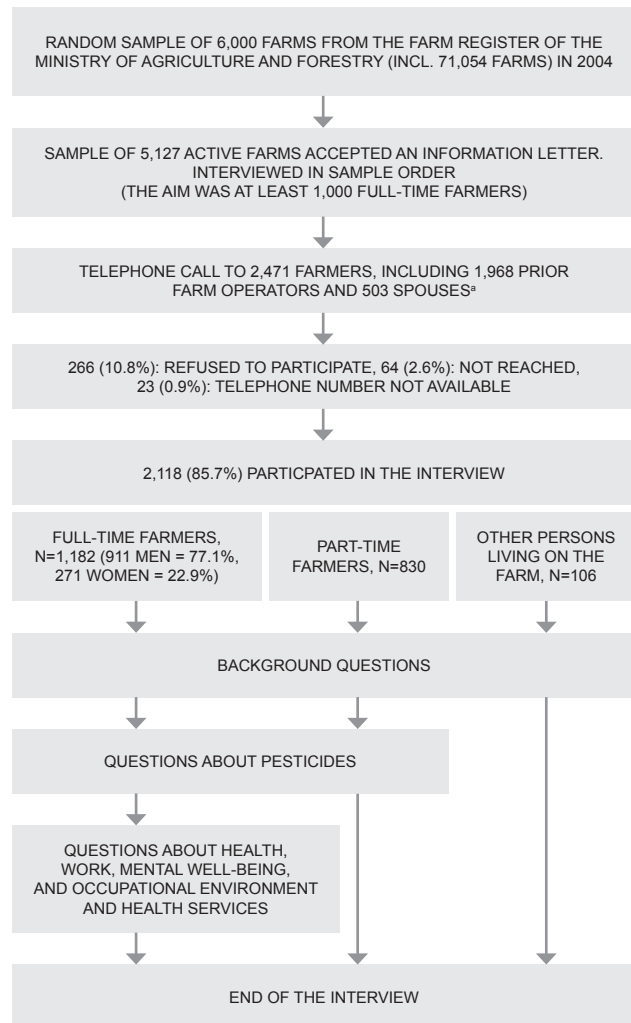
The aim of this study was to determine the prevalence of stress among Finnish full-time farm entrepreneurs ($n = 1,182$) in 2004, and to compare this with results from a reference sample of the general Finnish working population in 2003. Secondly, factors associated with the prevalence of stress among farm entrepreneurs were examined.

MATERIALS AND METHODS

The survey [Farm2004]. This study was part of a research project entitled "Occupational Health and Agriculture in Finland 2004" [Farm2004], which was carried out by the Finnish Institute of Occupational Health [20]. In October 2004, the farm register included a total of 71,054 farms [29]. Of these, 6,000 were randomly sampled and 5,127 active farms were accepted into this study. The aim was to interview at least 1,000 full-time farmers in order to obtain a representative sample of this population group in Finland, a requirement defined and calculated by power analysis. The study farms were contacted in the order that they appeared in the random sample until the target of at least 1,000 full-time farmers had been interviewed. An information letter about the research project was sent to the persons in this sample, after which they were contacted by telephone.

Of the 2,471 farmers who were contacted in the sample order, 266 (10.8%) refused to participate, 64 (2.6%) could not be reached, and in 23 cases (0.9%) the telephone number was not available. Finally, 2,118 farmers (86%) completed the interview. It was not known beforehand which persons in this group were full-time farmers, part-time farmers or other persons living on the farm. Therefore, the interviewer asked for this information at the beginning of the interview and selected the interview questions accordingly. The research data were gathered using computer-assisted telephone interviews. The sampling process is described in Figure 1, and the resultant sample of 2,118 participants included 1,182 full-time farmers, 830 part-time farmers and 106 other persons living on the farm. The 1,182 full-time farmers were asked all the questions in the interview.

In the Farm2004 study, work-related stress was assessed by, method similar to that of Elo *et al.* [5]. The interviewer first defined stress to the interviewee as a situation where a person feels himself or herself excited, anxious, irritated or distressed or she/he has difficulties sleeping because matters are constantly on her/his mind. The interviewer then asked if the interviewee felt this kind of stress at the time of the interview. Elo *et al.* [5] assessed the validity of this single-item measure of stress symptoms from 4 independent



*If only the prior farm operator was mentioned, he/she was selected for inclusion in the sample. If both the prior operator and spouse were mentioned, one of them was randomly selected.

Figure 1. Sampling and interview process in the Farm2004 study.

sets of data, and considered the content, criterion and construct validity for group level analysis to be satisfactory.

The research sample of Farm2004 was representative of Finnish farms in terms of regional distribution and production sector [27]. However, the average size of the sample farms, 44 hectares, was greater than for Finnish farms on average in 2004, which was 31.5 hectares (Tab. 1). Dairy farms in the sample had an average of 21 cows, whereas the average herd size for Finnish dairy farms in 2004 was 18 cows [28]. The average age of full-time farmers in the sample (46.9 years) was slightly lower than in the general farming population in 2004 (48.9 years) [28]. In the youngest and oldest age groups the proportion of women was slightly lower in our sample than on average on Finnish farms.

Reference sample of the Finnish working population [Work2003]. A reference sample was obtained from the "Work and health" follow-up study in 2003 [Work2003]. This study has been carried out by the Finnish Institute of

Table 1. Characteristics of interviewed full-time farmers.

Characteristic	n	%
Age group (years)		
18–34	124	11
35–44	356	30
45–54	405	34
55–64	297	25
Education		
No professional education	381	32
Professional course	65	5
Vocational school	545	46
Vocational college	150	13
Polytechnic school	17	2
University	24	2
Marital status		
Unmarried	203	17
Married or cohabiting	932	79
Divorced or separated	31	3
Widower or widow	16	1
Farm production sector		
Dairy	491	42
Other bovine cattle	85	7
Piggery	98	8
Other livestock	54	5
Grain	308	26
Other crop farming	105	9
Forestry	41	3
Size of farm (hectares)		
1–19	221	19
20–34	345	29
35–49	240	20
50–100	276	24
over 100	83	7
lack of information	17	1
Average field hectares		44
Average forest hectares		67

Occupational Health every third year since 1997 [11]. It aims to gather general information on the working conditions, health, working ability and well-being of Finnish people working in all professional branches of society. A sample of 4,966 Finnish-speaking 25- to 64-year-old persons was randomly selected from the register of Finnish citizens. The participation rate was 67% and a total of 3,331 persons from this sample were interviewed. The sample is representative of working Finnish citizens [19].

Statistical methods. The prevalence of stress was calculated and the z-test was used to statistically compare the Farm2004 and Work2003 samples. In these analyses, age and gender were standardized and the significance level

Table 2. Prevalence of stress in the Farm2004 sample.

Group	Stress (%)	n	Share (%)
Farm2004 sample	34	1 182	100
Gender			
Male	33	911	77
Female	35	271	23
Age group (years)			
18–34	33	124	11
35–44	36	356	30
45–54	37	405	34
55–64	28	297	25
Marital status			
Unmarried	29	203	17
Married or cohabiting	35	932	79
Divorced or separated	39	31	3
Widow or widower	13	16	1
Education			
No professional education	32	381	32
Vocational school	33	610	52
College or university level	41	191	16

was $p < 0.05$. The analysis model used was binary logistic regression, in which the response variable ‘stress’ was used as a binary variable (1 = stress, 0 = no stress). The SAS/LOGISTIC procedure was used to fit the model. The predictor variables were chosen from among the range of variables gathered in the Farm2004 study. They were chosen according to a previous follow-up study on Finnish farmers in 1992 [25]. These variables were classified as demographic and production variables, health and working ability, health behaviour and attitude variables. This list was completed by variables related to work, family, life circumstances, support outside the family and attitude towards the EU, which were also used in an earlier study by Leskinen [13]. The levels of the predictor variables were reclassified when the number of cases in one of the levels was too small, because in this situation the model may become unstable or might not run at all. Predictor variables with interrelated correlations were removed from the model to avoid the multicollinearity problem. Variables were dropped from the model if they did not significantly affect the response variables in the Farm2004 sample. Un-adjusted and adjusted odds ratios and 95% confidence intervals were calculated for each variable. The confidence intervals were related to the P-values such that the odds ratio would not be statistically significant if the confidence interval contains 1.

RESULTS

Prevalence of stress. One third of the farmers (34%) in our sample reported that they had some, quite a lot or a great deal of stress at the time of the interview (Tab. 2).

Table 3. Prevalence of stress, mental work load and overwork in the Farm2004 and Work2003 samples presented as relative proportions (%) of the corresponding group.

Symptom		Farm2004, men (n = 904)	Work2003, men (n = 1,146)	Farm2004, women (n = 269)	Work2003, women (n = 1,189)	Farm2004, all respondents (n = 1,182)	Work2003, all respondents (n = 2,335)
Stress	All	33a	40a	35a	49a	34b	44 ^b
Age group (years)	18–34	32	34	37	42	33	38
	35–44	34	42	41	53	36 ^a	48 ^a
	45–54	38	42	36	49	37 ^a	46 ^a
	55–64	29	40	24	48	28 ^a	44 ^a
Mental work load		33	32	34	38	33	35
Overworked		15	17	20	26	16	22

^a Difference is statistically significant when age is standardized; ^b Difference is statistically significant when age and gender are standardized.

Differences in the prevalence of stress between age groups and also between genders were quite small. Marital status and education were associated with the prevalence of stress; the highest stress level was among divorced or separated respondents (39%), and those having a college or university level education also reported the most stress (41%).

A comparison of Farm2004 and Work2003 samples revealed that full-time-farmers had a lower prevalence of stress than Finnish workers in general (Tab. 3). This was particularly seen in the oldest age group, for which the stress level of farmers was clearly lower than among working people in general.

Over half (58%) of the participants reported some kind of change during the previous 2 years. The most common change was a construction process (34%), with building of some kind taking place on the farm estate. The second most common change was the death or severe illness of somebody close to them (26%). Other important characteristics of the sample in addition to these changes were illnesses and the economic situation. Long-term illnesses were quite common in our sample, with 39% of the respondents having an illness or injury certified by a doctor. However, most of the respondents (91%) considered their economic situation to be satisfactory or good.

Risk factors for stress. Results of the logistic regression analysis indicated that the prevalence of stress was associated most strongly with a situation where there was a certain person in the family with whom the respondent had difficulty speaking (Tab. 4). Another strong association was with the situation where the respondent received very little or no mental support or help from the spouse. A low level or lack of support from neighbours, friends, relatives, organizations, authorities or similar sources was also associated with stress. By contrast, some or a lot of mental support, e.g. from neighbours and friends, was additionally associated with the prevalence of stress. Personal difficulties such as divorce or the end of a personal relationship were also associated with stress. Physical stress factors included the physical strenuousness of the work, an

illness or injury certified by a doctor and a low estimation of one's own working ability. Other factors associated with stress were the economic situation (either bad, adequate or satisfactory), a negative attitude towards the EU and a high educational level. Being a non-smoker and finding the strenuousness of life circumstances to be easy, quite easy or quite hard were factors protecting against stress.

DISCUSSION

The lower amount of stress in our sample of farmers than in the general working population may have a similar underlying explanation to that in a study of Norwegian farmers [15]. The results of that study indicated that farmers had been able to adjust to changing circumstances. During the recent decline of farming in Finland, the farmers who have continued are likely to be those who are prepared for change and who also have the psychological capacity to deal with stressful situations. However, our findings contradict those from a study by Saarni *et al.* [21], who described Finnish farmers (n = 129) as having a lower working ability and poorer quality of life than salary earners and entrepreneurs in Finland. According to the authors, their results may reflect the high demands combined with low support and control in the present farming sector [21].

According to the logistic regression analysis, family relationships had the clearest associations with stress in the present study. A clear risk factor was the existence of a certain person in the family with whom the respondent had difficulties speaking. Traditionally, farm families may also include other members in addition to the core family, such as grandparents or unmarried siblings. The second strong association with stress was the presence of very little or no support and help from the spouse. In accordance with our results, Berkowitz & Perkins [2] stated that psychosomatic stress symptoms among American farm women were associated with role conflicts, the level of support from the spouse and satisfaction with marriage. Family relations were also reported to play a major role as stress factors. Consistent with our results, being divorced or separated was one of the main reasons for high stress levels in a study

Table 4. Relationship between the response variable ‘stress’ and predictor variables in our analysis.

Effect		Odds ratio (OR) point estimates (95% Wald Confidence Intervals)	
		Adjusted	Un-adjusted
Economic situation	Satisfactory / very good or good	0.93 (0.66–1.31)	1.38 (1.07–1.78)
	Adequate or bad / very good or good	0.95 (0.54–1.67)	2.03 (1.35–3.07)
Change in production sector during the last 10 years: no change / has changed		1.21 (0.79–1.84)	1.21 (0.88–1.66)
Education	no professional education / vocational school	0.98 (0.68–1.41)	0.96 (0.73–1.26)
	college or university level / vocational school	1.84 (1.20–2.84)	1.46 (1.04–2.04)
Illness or injury certified by a doctor: yes / no		1.46 (1.03–2.06)	1.61 (1.26–2.05)
Number of sick leave days during the previous 6 months		0.99 (0.98–1.00)	1.01 (1.00–1.01)
Working ability 1–10 points, own estimation, low – high		1.26 (1.10–1.45)	1.44 (1.31–1.59)
Change in life during the last year	Marriage or beginning of other close relationship: no / yes	1.51 (0.67–3.39)	0.99 (0.56–1.75)
	Birth of a baby: no / yes	0.82 (0.47–1.44)	0.82 (0.52–1.29)
	Death or difficult illness of a close person: no / yes	1.25 (0.87–1.79)	0.90 (0.68–1.18)
	Divorce or ending of cohabitation yes / no	2.75 (0.99–7.61)	2.63 (1.38–5.01)
Physical exercise	At most 1–3 times per month / at least 3 days per week	1.50 (0.95–2.37)	1.32 (0.94–1.86)
	During 1–2 days per week / at least 3 days per week	1.22 (0.78–1.92)	1.13 (0.79–1.60)
Smoking: no / yes		0.69 (0.45–1.07)	0.58 (0.42–0.80)
Alcohol consumption	At least once per month / only a few times per year or never	1.04 (0.66–1.64)	1.03 (0.73–1.46)
	Once per week / only a few times per year or never	1.29 (0.83–2.00)	1.16 (0.82–1.62)
	At least twice a week or more often / only a few times per year or never	1.14 (0.73–1.76)	1.38 (1.00–1.92)
Strenuousness of agricultural work physically	Some strenuous / light or quite light	1.56 (0.88–2.76)	1.75 (1.12–2.72)
	Quite or very strenuous / light or quite light	1.28 (0.72–2.29)	2.42 (1.56–3.76)
Strenuousness of life circumstances	Quite easy / hard or very hard	0.17 (0.09–0.33)	0.11 (0.06–0.18)
	Quite hard / hard or very hard	0.51 (0.27–0.97)	0.37 (0.21–0.63)
	Easy / hard or very hard	0.07 (0.03–0.17)	0.04 (0.02–0.09)
“There is no sense in planning life beforehand”; disagree / agree		1.27 (0.85–1.88)	1.18 (0.86–1.61)
Mental support and help from spouse	No spouse or no need for support / a lot of support	0.93 (0.56–1.54)	0.87 (0.63–1.21)
	Very little or not at all / a lot of support	3.39 (1.53–7.52)	4.35 (2.33–8.11)
	Some support / a lot of support	1.12 (0.79–1.59)	1.12 (0.84–1.50)
Is there a certain adult person in your family whom you have difficulties speaking with: yes / no		2.72 (1.38–5.34)	4.61 (2.70–7.87)
Mental support from neighbours, friends, relatives, organizations, authorities, etc.	Not at all or only a little / no need for support from anyone	2.48 (1.31–4.68)	3.88 (2.37–6.34)
	Some or a lot of support / no need for support from anyone	2.14 (1.42–3.25)	2.70 (1.94–3.76)
Attitude towards the EU	No positive or negative attitude / positive attitude	1.02 (0.63–1.66)	1.05 (0.71–1.54)
	Negative / positive attitude	1.68 (1.07–2.65)	1.67 (1.17–2.39)

Bold font indicates statistically significant factors.

of farmers in New Zealand [6]. Our results indicate the importance of support; the respondents who were stressed suffered from a lack of support, but at the same time, some of those who had received support were still stressed.

The physical strenuousness of agricultural work was one of the stress risk factors. Sanne *et al.* [22] also reported a connection between the physical strain of agricultural work and stress. A negative attitude towards the EU additionally increased stress in our study. In other studies it has been found that complicated tasks related to agricultural administration and legislation were among the main reasons associated with stress [1, 4, 7]. According to a literature survey

[26], farmers had at the same time a high index of administrative work and considerable worries about the future. The state of health of farmers in our survey was associated with their level of stress. Poor health has also been reported as an important reason for stress symptoms in Canada and the United Kingdom [14, 23]. A recent follow-up study on the Finnish working population, “Work and health 2006”, revealed that farmers had the lowest working ability among all occupational sectors [17].

Almost 10% of the farmers in our sample had economic problems. According to the logistic regression analysis, having a bad, adequate and even satisfactory economic

situation was associated with stress. Similarly, in several other studies, economic problems have been among the main reasons for stress [6, 23, 24]. Gregoire [7] concluded from a literature survey that economic problems were often mentioned as reasons for stress among farmers in England and abroad.

It is interesting that higher education to a university or college level was associated with a higher stress level in our study. More highly educated farmers may have been more conscious of the high demands of the agricultural sector. On the other hand, a higher level of education may also provide skills to recognize and handle stress symptoms. However, some of the respondents were probably educated in a profession other than agriculture, which possibly caused ambiguity in their life. The farm enterprise is often inherited or bought from parents and other siblings. This situation may be a revelation to a new farmer and is not prearranged. Farm wives often have schooling in another profession and their work on the farm is often due to marriage. By contrast, Melberg [24] found education to lower the stress level among Norwegian farmers.

The strength of this study is that it is based on a large number of interviewed persons, totalling 1,182 farm entrepreneurs working full-time on a farm. The participation rate in the telephone interview (86%) was also high. A wide variety of questions were asked in the survey, so it was possible to determine which factors associated with the prevalence of stress. The differences between our sample and the Finnish farming population were mainly a result of only full-time farmers being interviewed in this survey.

CONCLUSIONS

One in three (34%) full-time working farm entrepreneurs in 2004 ($n = 1,182$) had symptoms of stress, which was a lower proportion than among the general Finnish working population (44%) in 2003. Problems in social relationships in the farming family, a lack of mental support and help from the spouse, divorce, and the existence or lack of mental support from neighbours and other persons had the clearest association with stress in our sample. Good social relationships with close persons are thus important elements to avoid stress. Physical stress factors included the strenuousness of agricultural work, illness and a low estimation of working ability. The economic situation, a higher educational level and a negative attitude towards the EU were also associated with stress. Health and extension services for the farming sector should be able to advise and support farm women and men, particularly on paying attention to maintaining their social relationships. Our finding of a relatively low level of stress may indicate that those who have continued within the agricultural sector are prepared for changes and also have the psychological capacity to deal with stressful situations.

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