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EMPOWERMENT IN FARMERS' OCCUPATIONAL HEALTH SERVICES

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Abstract: This study attempted to develop farmers' health and farmers occupational health services (FOHS) by examining the effects and feasibility of empowered farmers' teams on walk-through surveys of Finnish dairy farms. FOHS personnel of the health centre in three municipalities selected three farmer teams for the intervention group. Each team consisted of three or four couples. The selected comparison group resembled the intervention group. The number of the farms was 31 in the intervention group and 33 in the comparison group. Before and after the intervention each subject responded to questionnaires. The initial walk-through survey was carried out in 1998-1999, and the follow-up took place in 2000–2001. During the follow-up the FOHS personnel identified the changes made after the initial surveys on the farms. The farmers and FOHS personnel also underwent a thematic interview. Altogether 217 changes were made, half of them to improve ergonomics, and 87 of the 217 were extensive. The empowered farmer groups produced more changes in the work environment. The use of empowered farmer groups is feasible in walk-through surveys, and the approach can be easily learned. Empowered groups are also a challenge for FOHS personnel, and they enrich the work of these workers. The farmers want more varied measures for work-site health promotion, and, particularly, they feel that an occupational health physician should be present on walk-through surveys.

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INTRODUCTION

In Finland, occupational health services have been provided for farmers since 1979. The development of these services was based on research carried out by the Social Insurance Institution and the Kuopio Regional Institute of Occupational Health [17].

An accelerated change in Finnish agriculture started when Finland became a member of the European Union [11]. The workload and, especially, mental stress of farmers seem to be increasing as farms become larger [11]. Moreover, in the 1990s the resources needed for farmers' occupational health services decreased in the municipal health centres [19, 20]. In addition, the Farmers Social Insurance Institution and occupational health personnel have been worried about the impairment of farmers' occupational health services. These trends led to this study to develop farmers' occupational health through empowerment.

In agricultural work, occupational diseases, accidents and work-related disorders are common [4, 6, 9, 10, 17, 23]. Work-related mental stress is also one of the most important health risks in modern agriculture [11]. In Sweden, farmers are more worried about the future and use fewer health services than the rest of the Swedish population [23, 26]. In the United States, the health and safety of farmers is considered important to guarantee the basic food supply [21].

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In Finland, farmers' occupational health services (FOHS) are produced according the principles of "good occupational health practice in farmers' occupational health" [25]. One of the procedures is a walk-through survey carried out by occupational health personnel on each farm every third or fourth year. The survey is usually completed by an occupational health nurse and an agricultural adviser [7, 25]. It has been found that FOHS need to be made more interesting so that farmers will respond to their actual and specific needs [6]. Farmers are encouraged to evaluate and improve their own work conditions [3]. FOHS should also be extended, for example, by including more walk-through surveys of farms. Furthermore, the competence of FOHS personnel needs to be improved in terms of economics and work conditions [19].

The use of small groups has been found to be more efficient in changing work conditions than the visit of practitioners and their feedback [16]. In Denmark, good results were obtained when workers were trained in small groups to provide improvements in work conditions [8]. In the United States, three different types of safety intervention in agriculture were compared. The self-intervention made by farmers seemed to be the most efficient as the risks related to work conditions decreased by 20% [13]. Positive results have also been obtained with the use of group activities in Finnish FOHS. Female farmers changed their life-style, and the change improved their work ability and reduced their musculoskeletal symptoms [18].

In public health the concept of empowerment is considered a social process through which individuals as members of the community and organisations control their life in changing social and political environments. The ultimate goal of empowerment is to improve the equality and quality of life [14, 15]. In the promotion of occupational health and safety, the concept of empowerment is used to increase the knowledge of workers about work-related problems and their causes [15, 28]. The following three measures are used to enhance the promotion of occupational health: 1) evaluation of more comprehensive health programmes for workers; 2) increase in the role of workers in programmes to promote health; and 3) use of more activating and empowering methods in the promotion of health [15]. The basics of empowerment are close to those of adult education, in which the main goal is to promote participation and active learning according to the following principles: 1) learning is best when students can participate in problem solving and learning in practical training situations and can creatively apply of their knowledge; and 2) learning is the most efficient in the correct context, based on reliable analyses of needs. Activating learning methods are basic elements of empowerment. They develop critical thinking, social skills and active work orientation [28]. All principles of empowerment can be implemented in working life.

The aim of this study was to develop farmers' health and FOHS by examining the effects and feasibility of empowered farmers' teams in walk-through surveys on Finnish dairy farms. The specific study questions were the following: 1) Are walk-through surveys carried out with the aid of an empowered farmer team more effective than conventional ones performed only by occupational health practitioners? 2) Is it possible to increase farmers' motivation to improve their work conditions through empowerment? 3) Does the use the empowered farmer teams affect the work of FOHS?

MATERIAL AND METHODS

The FOHS personnel in the municipal health centres of Perhojokilaakso, Pielavesi and Saarijärvi selected three farmer teams for the intervention group. Each team consisted of three or four couples (n = 9). The selected comparison group (n = 9) resembled the intervention group in age, basic education, field size, forest size, and size of cattle herds. There were 31 farms and farmer couples in the intervention group and 33 farms and farmer couples in the comparison group (Tab. 1).

The study was started in 1998 in Saarijärvi, where the FOHS personnel were given a one-day training course in the study procedures and methods. The same training was given in Perhojokilaakso and Pielavesi in 1999 (Fig. 1). The FOHS personnel were trained to work with consultative work orientation according to the actual needs and prerequisites of the clients. Thus, the role of the subjects was increased in walk-through surveys of farms.

Before and after the intervention, each subject responded to questionnaires which included items on work ability [27], work stress [5], sense of coherence [1, 2] and customer satisfaction [24]. The questionnaires were distributed to the subjects by the FOHS personnel during the health examination.

The initial walk-through surveys were carried out in 1998–1999. The FOHS personnel worked in their normal

Table 1. Baseline characteristics of the subjects and their farms.

Municipal Group	Subjects (n)	Age (years)	Farms (n)	Field area (ha)	Forest area (ha)	Cows (n)
		Mean [SD]		Mean [SD]	Mean [SD]	Mean [SD]
Perhonjokilaakso						
Intervention	22	39 [7]	9	39 [10]	65 [33]	25 [9]
Comparison	21	46 [7]	9	33 [18]	73 [45]	21 [14]
Pielavesi						
Intervention	21	44 [6]	11	40 [10]	96 [53]	19 [3]
Comparison	22	41 [8]	12	32 [12]	102 [54]	19 [7]
Saarijärvi						
Intervention	25	41 [6]	11	44 [19]	79 [44]	25 [7]
Comparison	25	45 [8]	12	34 [15]	60 [34]	19 [7]
All						
Intervention	68	41 [7]	31	41 [14]	81 [45]	23 [7]
Comparison	68	45 [8]	33	33 [14]	79 [48]	19 [9]

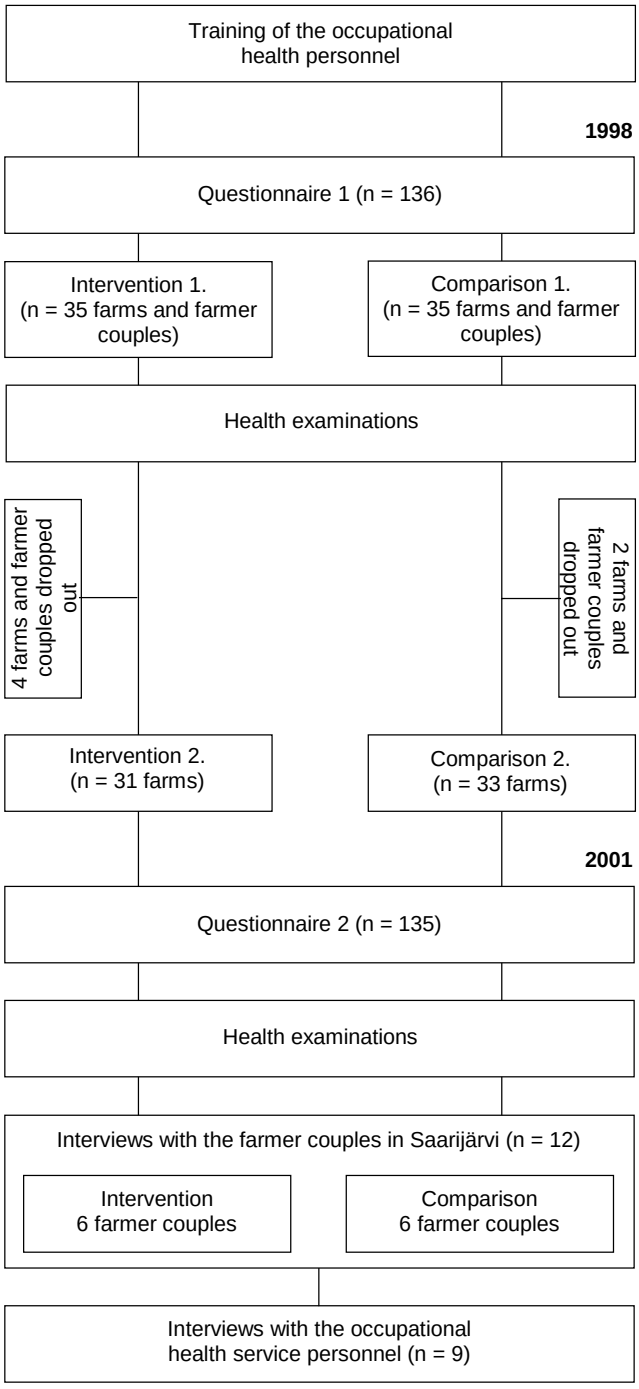

Figure 1. Study scheme and design.

manner with the subjects of the comparison group. With the subjects of the intervention group, empowerment was applied, and the subjects held the key role during the walk-through surveys.

In Saarijärvi, the FOHS personnel consisted of an occupational health nurse, a physiotherapist and an agricultural adviser. In Perhojokilaakso, the personnel included two occupational health nurses and an agricultural adviser. In Pielavesi, an occupational health nurse and an agricultural adviser carried out the survey. Occupational health physicians had no time to participate in the walk-through surveys of the farms.

Table 2. Number of extensive (expenses > EUR 6000) changes and all changes made in work conditions in the intervention and comparison groups during the study period, n = the number of farms.

Municipal group		Changes		Changes per farm	
	n	Extensive	All	Extensive	All
Perhojokilaakso					
Intervention	9	7	38	0.8	4.2[a)]
Comparison	9	6	18	0.6	2.0[a)]
Pielavesi					
Intervention	11	10	15	0.9	1.4
Comparison	12	5	13	0.4	1.1
Saarijärvi					
Intervention	11	36	83	3.1	7.5[b)]
Comparison	12	23	50	2.0	4.2[b)]
All					
Intervention	31	53	136	1.7[c)]	4.4[d)]
Comparison	33	34	81	1.0[c)]	2.5[d)]

Intervention *vs.* comparison: [a)] $p = 0.0040$; [b)] $p = 0.0242$; [c)] $p = 0.0632$; [d)] $p = 0.0081$.

A typical walk-through survey lasted 3–4 hours. The FOHS personnel gave expert help to the subjects and made notations. One of the FOHS personnel served as the chairman of each group, and he or she led the discussion.

The follow-up walk-through surveys were carried out in 2000–2001. The interval between the initial and follow-up surveys was 1.5–2 years. After the follow-up surveys the subjects underwent health examinations, and the questionnaire study was repeated. During the follow-up surveys the FOHS personnel identified the changes that had been made since the initial surveys.

In addition, in Saarijärvi, a thematic interview was carried out in 2001 (Fig. 1). Six couples were interviewed in both the intervention and comparison groups. The occupational health nurse selected the couples for the interviews.

Each couple was interviewed separately. The interviews were tape-recorded and covered the following topics: the significance, experiences with, observations, usefulness and development of walk-through surveys, satisfaction with the FOHS, and costs of the FOHS.

A thematic interview was also carried out among the FOHS personnel in each health centre of the study. The interviews were completed in groups and tape-recorded. The interviews were recorded, coded and analysed by qualitative methods [12, 22].

The data from the questionnaires and walk-through surveys were analysed with the SAS-GLM programme. The differences between the groups were tested with the Student's t-test. The Shapiro-Wilk test was used for the evaluation of normality. The differences were considered significant when $p < 0.10$.

RESULTS

Customer satisfaction was good both before (1998) and after (2001) the intervention, and the differences due to the intervention were minor. Sense of coherence and work stress showed no significant differences between before and after the intervention or between the intervention and comparison groups. The differences in work ability were not significant.

Changes in the working conditions were identified by the FOHP personnel. The number of changes is shown in Table 2. About half of the 217 changes were made to improve ergonomic features of the work, but often the changes also increased safety. The number of extensive (costs EUR > 6000) changes was 87, and 35 of these changes focused on the production environment. The other extensive changes were made to improve ventilation systems and work distribution or to hire extra work force. In a few cases, personal protective equipment had been introduced. More changes had been made in the intervention group (Tab. 2).

Interview in Saarijärvi

Significance of the walk-through surveys. All the subjects believed that outsiders can detect factors that cannot be observed by themselves. The advantage of the empowered farmer team was that there were many competent observers. It was valuable to discuss in groups and to learn from others. It was supportive to realise that the others had the same kind of difficulties and these difficulties could be discussed. One subject commented as follows on the walk-through surveys:

> I think that the eyes of outsiders can see the places that we should pay attention to on the farm for protecting our health so that it could be good without any diseases … our own eyes are blind on our farms because we are always in these small circles. This new system is good because there are so many eyes to observe … and they have done the same work … so they have even more accurate eyes compared with those who are not mainly working in agriculture. [Intervention 1]

The subjects in the comparison group thought that the purpose of the walk-through survey was to develop the work environment and methods. They believed that the outsiders could see various factors in the work environment and work methods that could not be seen easily by the farmers themselves. The FOHS personnel were considered to understand farmers' health problems better when their work environment and methods are familiar. One farmer commented follows:

> If you are talking about these things in the office … they don't understand where we are working … it is totally different to see everything on the farm … then they know why I am claiming for my back pain. [Comparison 5]

Experiences with the walk-through surveys. The subjects considered the empowered groups to be a positive addition to the walk-through surveys. The openness of the groups was good, and it was possible to communicate directly. Different farms could be seen and good solutions and practices could be observed that could help improve health and safety at work. As social events the farm visits were good, and the subjects looked forward to them. The walk-through surveys with the empowered groups were better and more efficient than the conventional ones. One subject made the following comment concerning experiences with the walk-through surveys:

> We had a very good team … all were active … it was a very nice time with this team … [Intervention 3].

The walk-through surveys were also considered good by the subjects in the comparison group. The discussions with the FOHS personnel were relevant, and the subjects received competent advice to help develop the work environment on their farms and reduce risks. The atmosphere during the visits was good. One of the subjects made the following comment:

> Over the years, we have learned to know each other…they give relevant advice and we discuss everything. [Comparison 1]

Observations made during the walk-through surveys. Most of the observations made during the walk-through surveys were related to poor ergonomics. Frequent carrying, poor milking postures and the lack of equipment to help relieve workloads were common. New ideas and relevant solutions were produced, but often economic factors prohibited their realisation. Nevertheless, stairs were often built and wheelbarrows were purchased to prevent accidents. Extensive changes were also undertaken, a new cow house was built or a cow house was expanded. The group recommended no reforms directly, but it did influence discussions and thinking. The new social contacts were important for many of the subjects. The following two opinions were given by the subjects with respect to the observations made on the walk-through surveys:

> In our group, all the farmers had built something new during the two-year period, so there were a lot of changes. [Intervention 5]
> We thought about building a new cow house on the site of the old one, but the group said not to … how can you have production at the same time … so we built the new cow house next to it, and we have also had production during the construction. [Intervention 2]

The subjects in the comparison group stated that the FOHS personnel observed work methods, personal protective equipment, dusts, biological risks, safety issues and the ergonomics of milking. One farm was expanded, and several changes were made in the work environment. There were new milking rails and ramps. Ventilation systems were replaced and the handling of cow manure was automated. The subjects mentioned that only some of the proposals for improving work conditions were possible because of the costs involved. Some renovation work was carried out without suggestions of the FOHS personnel, but, in many cases, they affected changes indirectly. Two of the subjects made the following comments:

> At least … we got the milking rails because my back is so poor … we got some economic help for them … then we have a new

> milking stool … when we did the basic renovation…constructed ramps, replaced the ventilation system, which is the most remarkable change made and then, of course, we have a new automatic cow manure system … and then an automatic forage system. [Comparison 3]

Usefulness and development of the walk-through survey. The empowered teams were considered useful on the walk-through surveys. Meeting colleagues and discussing ways to improve the farms and agricultural work were considered positive. Farm visits were good as social events. It was important to talk about mental well-being and individual resources. It was also important that the FOHS personnel learned more about the work environment on the farms. It was proposed that, when the empowered team was coming, the FOHS personnel could come earlier in the morning and see real farm work in practice. The farmers belonging to the teams could come when they completed their own work. It was also requested that the FOHS personnel be able to observe special season-related work, too. More discussions about mental well-being and marital problems were requested from the FOHS personnel. The following, three opinions came from the subjects:

> Actually, we were waiting for these events … it was such a good meeting. [Intervention 3] They were very useful for us. [Intervention 4] The most important theme of our discussions was mental well-being. [Intervention 5]

The subjects in the comparison group also considered the walk-through surveys to be useful. Many of them thought that walk-through surveys cannot be substituted by any other means. The surveys should be revised so that at least a some of them are carried out during workhours. In Saarijärvi, the subjects heard many positive comments about the empowered group walk-throughs. Two of them were asked to join the empowered groups, but they refused because the empowered surveys took more time. The comments of two subjects were as follows:

> I feel that never … is too much spoken about protective equipment … younger farmers actually use them more actively. [Comparison 2] Yes, we discussed the fact that we could join and then we could see the ideas … but in the winter we have snow work … [Comparison 4]

Occupational health services and costs. The quality of FOHS depends on the competence and expertise of the personnel. The costs of the FOHS were low. The activities of FOHS should focus more on worksite health promotion and, particularly, on mental well-being. Two opinions of subjects follow:

> We think … it is the personnel who makes it good or bad … we have been lucky that we have these good experts here in Saarijärvi. [Intervention 1]

In general, the subjects of the comparison group were satisfied with the FOHS. The costs of the FOHS were estimated as low, and the farmers' own costs were not considered to be a problem. One subject made the following comment:

> It is not expensive and it also affects the discount on the insurance fee. [Comparison 4]

Interview of the FOHS personnel

Positive experiences with the empowered walk-through surveys. According to the FOHS personnel, the farmers on the empowered teams learned from each other, and saw different solutions for improving work conditions. The FOHS personnel also learned more on walk-through surveys that included an empowered group than they did on conventional ones. The empowered walk-through surveys were positive and offered new challenges to the FOHS personnel. The empowered walk-through surveys produced more changes related to the work environment. Especially the most active groups were efficient. The following, two comments were made about empowered walk-through surveys by FOHS personnel:

> Yes they gave us more than the conventional worksite visit. [Health Centre 1] They were useful for us, we learned much … when we were listening to their discussions … [Health Centre 3]

Negative experiences with the empowered walk-through surveys. It was sometimes difficult to gather an empowered group for a walk-through survey. The demands on the farmers' time and the size of the groups caused some problems in the organisation of the groups. Passive groups were difficult to control. Sometimes it was also difficult to keep the group concentrated on the topic in question. Because of the lack of privacy, it was not possible to talk about all personal issues in the group. In addition, because of the strict timetable, only the cow houses were observed. The empowered walk-through surveys were conducted after the subjects had completed their own farm work, and therefore they could not observe each other's work. FOHS personnel made the following comments about empowered walk-through surveys:

> … It was more difficult to organise … that one could get adequate time for all. [Health Centre 3] … The silent group … it was not easy to start … but the atmosphere was good. [Health Centre 2]

Positive experiences with the conventional walk-through surveys. The conventional walk-through surveys were more individual, and during them it was possible to talk about personal issues. They were also more efficient in going through the farms. The roles and work distributions of different professionals were clearer within the team. It was easier carry out walk-through surveys during work hours. FOHS personnel made the following two comments about the conventional walk-through surveys:

> … In a way, it is more individual…the others do not disturb that situation … [Health Centre 1] One's own role is clearer … when you are on one farm then you can give your whole attention to it. [Health Centre 3]

Negative experiences with conventional walk-through surveys. The conventional walk-through surveys were often performed according to a similar routine. Therefore, they were sometimes frustrating. After the conventional walk-through surveys, fewer changes were made than after the empowered ones. In the conventional walk-

through surveys the farmers often talked about their personal problems and diseases. When the FOHS personnel went to the farms in the morning or in the evening, their workday was four hours longer. Two comments of FOHS personnel were as follows:

> … I get frustrated also by myself … these are always the same things … there should be something to give … I feel it too light. [Health Centre 1] … Farmers are whispering about their diseases … but the purpose of the walk-through is to evaluate the work conditions. [Health Centre 3]

Main differences between empowered and conventional walk-through surveys. Empowered walk-through surveys were prepared together and more carefully than the conventional ones. The empowered walk-through surveys influenced the conventional ones, since the FOHS began prepare the feedback already during their visit to the farms. The work method was more consultative with the empowered teams. In one FOHS team there were slight difficulties in adopting the consultative approach because the knowledge of the team members was not sufficiently coherent. At the beginning, the empowered walk-through survey took additional time, namely, 5–6 hours for the entire survey. However, it soon decreased to the same level as used with the conventional walk-through surveys, being 3–4 hours. During empowered surveys difficult subjects had to be discussed mostly at a common level. The following two comments were made by FOHS personnel:

> … I collected such a file the first time … we brought it [file] on those farms … these brochures … and we were reading them through. In the traditional visits we have not done it so systemically … and we were thinking in advance of the themes … which we thought to be topical and which should be gone through…and how we could integrate them into our walk-through surveys. [Health Centre 1] … It happened that we discussed in such a way that the idea has appeared to be the farmer's own idea … it works better like that … at least my approach has changed so that all the walk-through surveys work in this way better and better … [Health Centre 2]

Costs of the different walk-through surveys. From the point of view of the health centres the costs were equal for the conventional and empowered walk-through surveys. The organisation of the empowered surveys took more time than the conventional ones, but the FOHS would be reimbursed for this cost. The following comment was made by FOHS personnel:

> So if we think about the work hours … they are perhaps at the same level. [Health Centre 2]

Changes in the work environment after the different walk-through surveys. The active groups produced more changes than the passive ones. The empowered surveys initiated more changes than the conventional ones. In one community the FOHS personnel thought that active farmers liked to have empowered walk-through surveys more often than the conventional ones because of their efficiency. FOHS personnel made the following two comments about the changes made:

> … In those groups were more of those … that in these groups included the farmers who were more active and open-minded, and just a certain type of farmer. [Health Centre 1] In those empowered walk-through surveys, farms were changed more, more personal protective equipment was bought and some investments were being made in the cow house. [Health Centre 3]

Walk-through surveys in the future. The empowered groups should continue their work, and new groups should be established. Farmers' opinions must be taken into consideration. Empowered walk-through surveys are suitable for certain types of farmers, and FOHS can learn to recognise when they are feasible. The FOHS personnel expressed the opinion that the suitable group size for empowered groups is three farmer couples. Conventional walk-through surveys are also needed and they should be continued - but they should be consultative. The FOHS personnel also thought that an occupational health physician has an important role. Two comments of FOHS personnel follow:

> Surely we do according to the willingness of the farmers, if they want to go on we are not against it, but if they want the traditional walk-through survey we are not against that either. [Health Centre 3] We will surely do both types of walk-through surveys, it is more work with this group … but it is also an interesting procedure … the farmers may be eager for it. [Health Centre 2]

DISCUSSION

Methodological aspects. In Perhojokilaakso, two farms in the intervention group and comparison group dropped out in this study because the coalition of health services of two communities separated, and two farms sold cattle. An intervention farm withdrew from the study both in Saarijärvi and Pielavesi, one because of divorce and the other without a reason being given. The farms that withdrew from the study probably had no influence on the results. The results were mainly similar in the studied communities. In Saarijärvi, there was more selection into the intervention group, but the selection probably had minor influence on the results because there was a bigger difference between the intervention and comparison groups in Perhojokilaakso. In Pielavesi, there were no differences between the changes on the farms although the FOHS personnel formed that opinion as a result of the active intervention groups.

When cultivated area, forest area and number of cows are included, no significant difference in the social economical status could be found.

The farmers knew that certain farms belonged to the intervention group and the others to the comparison group. This situation probably had no influence because, in the interview, the farmers talked about it and they did not know the precise study plan. In the interview, the farmers stated that the group had no effect. Most of the changes were completed in Saarijärvi in both groups. Perhaps this result indicates that there are differences between both municipalities and occupational health services. It was also remarkable how accurately the FOHS personnel recorded the changes. In Saarijärvi, the FOHS team also included a physiotherapist, who may have had some

influence on the results. In Pielavesi the FOHS team consisted of only two persons, and this situation also may have had some influence on the results. The identification of the changes in the work environment was a natural indicator. It demanded accuracy and objectivity to record the changes. The results of the interviews on client satisfaction and the changes made on the farms were in agreement, and they supported the reliability of the results.

The interviews were conducted in Saarijärvi because the intervention was completed in that community first. The study was carried out in only three communities, and there are many interesting factors which may have affected the results but which cannot be generalised, although they show a trend.

Changes in the work environment. In Denmark, group training and brainstorming were used in occupational health services in different kinds of case studies for developing the work environment, and the results were encouraging [8]. Also in the United States, self-evaluation of the workplace by farmers has shown good results in improving the work environment [3, 13]. Our results agree with the previous ones. They also agree with the findings of earlier studies on the use of groups in occupational health care in Finland [16,18]. It seems that empowerment is as effective and feasible for promoting occupational health as earlier studies have suggested [15, 28].

Farmers' experiences. The farmers gave the FOHS a good rating on average, but somewhat better ratings were given by the farmers who took part in the empowered groups. This finding showed that the farmers' needs were met better in the empowered group visits. The experiences of the farmers provided hints on how to improve FOHS. The study of Gerrard, in Great Britain, also indicated that FOHS should be developed from the farmers' point of view [6].

FOHS personnel's experiences. The different role of the FOHS personnel was somewhat confusing at first, but they adjusted after some time. The empowered group visits influenced the conventional visits in that they also became more consultative and it has some effect on the results.

CONCLUSIONS

The experiences with both types of walk-through surveys were positive. The empowered farmer groups produced more changes in the work environment, however. The empowered group visits created new social relations, the farmers learned from each other, and they shared their experiences. The active groups inspired changes, and the other farmers supported changes. The conventional worksite surveys had some advantages, for example, they were more individual, provided more privacy, and were broader and more systematic. It is important that farmers should be able to choose which kind of walk-through survey they prefer. The farmers hoped for more different types of measures in worksite health promotion, and, particularly, occupational health physicians should be present during walk-through surveys. It is possible to use empowered farmer groups in Finnish health centres, and the approach can be learned easily. Empowered groups are also a challenge to FOHS personnel and help make their work richer. Although the intervention succeeded in our study, more adequate training of FOHS personnel is still needed. Our study showed that walk-through surveys with empowered farmer groups are effective and feasible in FOHS.

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