

平成 22 年 6 月 25 日現在

研究種目：基盤研究（C）
 研究期間：2007～2009
 課題番号：19500708
 研究課題名（和文）高齢農業従事者の疲労を規定する生活環境と食生活改善に向けた行動支援
 研究課題名（英文）Lifestyle-related factors contributing to fatigue among elderly farmers and the support for diet improvement
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研究成果の概要（和文）：高齢女性農業従事者を対象に疲労アンケート調査及び食習慣調査を実施した結果、調査対象者の約半数は生活習慣病関連による通院・服薬を行っている実態があり、健康状況が働き方に影響を及ぼしていることが示唆された。また、現地農作業に基づいた模擬実験を行い、農作業負荷時におけるエネルギー代謝、運動量の測定、自覚疲労調査、食事調査を行った。農作業負担と健康状態、疲労に及ぼす食事摂取状況の影響を総合的に判定するためには、長期間にわたる食事摂取状況の影響や高齢者の生活構造の中に潜在する健康問題の改善策をさらに検討する必要があることが示唆された。

研究成果の概要（英文）：The elderly farmers of this study are performing farm work although they are in poor physical health. To assess fatigue and working conditions among elderly female agricultural workers, the Fatigue Questionnaire and a nutrition survey were administered. Laboratory model based on citric culture was designed by adopting healthy young subjects. Based on the subjective symptoms of fatigue during farm work, which were identified using measurements of energy consumption, exercise and a nutrition survey, it was suggested that health conditions may affect fatigue among elderly female agricultural workers. Comprehensive analysis incorporating objective data is highly meaningful for realizing healthy lifestyles among elderly farmers. It was considered necessary to conduct further research on working stress, health status, and the effects of long-term eating habits on fatigue.

交付決定額

(金額単位：円)

	直接経費	間接経費	合計
19年度	1,600,000	480,000	2,080,000
20年度	1,200,000	360,000	1,560,000
21年度	700,000	210,000	910,000
年度			
年度			
総計	3,500,000	1,050,000	4,550,000

研究分野：公衆栄養学

科研費の分科・細目：生活科学・食生活学

キーワード：疲労、農業従事者、高齢者、食生活、健康

科学研究費補助金研究成果報告書

1. 研究開始当初の背景

高齢農業従事者の疲労とその軽減対策は農村保健における重要な研究課題となっている。本研究の対象である山口県内の柑橘類農家および野菜等栽培農家においては、高齢化の進行が顕著であり、高齢者は体調の不良を持ちながら農作業に従事している現状がある。

2. 研究の目的

農作業による疲労問題を生活構造全体の中で捉え、高齢農業従事者の疲労軽減、健康の維持増進を最終目標とする生活環境、食生活改善のための行動支援のあり方を明らかにすることを目的に研究を進めた。

3. 研究の方法

高齢農業従事者の健康を規定する生活環境要因について、食生活を含む生活習慣と疾病との関連、食習慣と高齢者の健康の問題、農作業負担と健康状態、農作業による身体的疲労の原因と考えられる作業負担等の調査結果を基に、総合的解析を進めた。

(1) 高齢女性農業従事者を対象に疲労アンケート調査と合わせて食物摂取頻度調査法 (BDHQ) による栄養調査を実施し、健康状況に関するデータの集計・解析を行い、疾病の有無別に対象者を解析した。

(2) 若年者を被験者として現地農作業に基づいた模擬実験を行い、農作業負荷時におけるエネルギー代謝 (携帯型カロリーメーター METAVINE)、運動量 (身体活動 Ex) の測定、自覚疲労調査、食事調査を行った。生理学的指標、健康状況も含めた生活環境要因と疲労との関連について総合的な解析を試みた。

(3) 非農業従事高齢者を対象に食事調査を実施し、本調査対象者の調査結果を含めた高齢者の生活構造の中に潜在する健康問題の改善策を検討した。

4. 研究成果

(1) アジア農村医学会 (The 11th Asian Congress of Agricultural Medicine and Rural Health, Aurangabad, India, 2.2008) において発表「Fatigue among Female Agricultural Workers Associated with Their Health Conditions」を行い、疲労調査票の汎用性さらに栄養素等摂取状況の結果も合わせた総合的解析の意義を示すことができた。

Abstract : Fatigue among elderly farmers and countermeasures for it are of major concern

among practitioners of rural medicine. Among the subjects of this study, vegetable farmers in western Japan, aging of agricultural workers is remarkable, and the elderly farmers are performing farm work although they are in poor physical health. The purpose of this study is to assess fatigue among female agricultural workers and to explore the associations between health conditions and fatigue.

To assess fatigue and working conditions among elderly female agricultural workers, the Fatigue Questionnaire for Farmers developed by the Rural Life Research Institute, Japan and a nutrition survey based on the Brief-type self-administered Diet History Questionnaire (BDHQ) were administered. After excluding invalid responses such as incomplete responses, a total of 44 responses were included in the analysis of the relationships between health conditions and fatigue. The subjects were classified into two groups for analysis: the disease group and disease-free group. Work situation and lifestyle, including dietary habits, were compared between these two groups. Although there were no significant differences between the groups, working hours per day in the disease group were shorter than that in the disease-free group, and rest time was higher than that in the latter group; additionally, farmers in the disease group tended to have a higher level of overall fatigue and work load. Nutritional conditions, as demonstrated through the intake of micronutrients such as potassium, calcium, vitamin K, and vitamin B₂, were significantly different between the two groups.

Health conditions may affect fatigue among elderly female agricultural workers. Comprehensive analysis incorporating objective data is highly meaningful for realizing healthy lifestyles among elderly farmers. Further study on a larger number of subjects and over greater geographical area are required.

**FATIGUE AMONG FEMALE
AGRICULTURAL WORKERS
ASSOCIATED WITH THEIR
HEALTH CONDITIONS**

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Background

- Aging of agricultural workers in Japan
- Increased number of women entering agricultural work force

Aims

- Strategy for fatigue countermeasures among elderly farmers
- Assessment of fatigue among female agricultural workers
- Investigation of associations with work and health conditions

Subjects and Methods

> Subjects : 44 female vegetable farmers (43 - 77 yrs)

> Questionnaire :

- 1 Fatigue Questionnaire for Farmers
- 2 Brief-type self-administered Diet History Questionnaire

Questionnaire items analyzed

- 1 Hours spent on : Agricultural work, Housework, Rest, Sleep
- 2 Fatigue : Physical fatigue, Mental fatigue, Overall fatigue
- 3 Work stress : Work load, Job demand, Work control
- 4 Social support : Social support impossibility
- 5 Satisfaction : With work , with social life, with income
- 6 Health priority
- 7 Dietary habits : Energy and nutrient intakes

Results

Table 1 Average age, BMI, and hours of agricultural work, rest, sleep and housework according to health conditions

Group	Disease group (n=20)	Disease-free group (n=24)
Age	61.3 ± 7.8*	66.1 ± 6.4
BMI	23.4 ± 2.7	22.6 ± 2.5
Hours /day of		
agricultural work	4.2 ± 1.7	4.9 ± 2.3
rest	2.2 ± 1.4	1.9 ± 1.1
sleep	6.9 ± 1.2	7.3 ± 1.2
housework	4.3 ± 2.0	4.0 ± 2.2

Values are mean±SD. *, p<0.05, compared with disease-free group

Table 2 Energy and nutrient intakes of subjects

Dietary intakes (/day)	Recommended dietary allowances	Disease group	Disease-free group
Energy (kcal)	1650-1950	1899 ± 468	1789 ± 501
Protein (g)	50-95	77.4 ± 23.8	67.5 ± 24.0
Fat (g)	37-54	54.0 ± 21.1	52.2 ± 22.8
Carbohydrate (g)	206-340	273.6 ± 72.5	256.2 ± 80.3
VA (μgRE)	600	1122 ± 485	939 ± 396
VB ₁ (mg)	1.0	0.9 ± 0.2	0.8 ± 0.2
VB ₂ (mg)	1.2	1.4 ± 0.5*	1.2 ± 0.4
VC (mg)	100	166 ± 45	147 ± 50
Ca (mg)	600	648 ± 227**	492 ± 228
Fe (mg)	10.5	8.2 ± 2.5*	7.0 ± 2.3
NaCl (g)	< 8	13.1 ± 3.4	12.0 ± 3.8
K (mg)	1600	2988 ± 3.4*	2572 ± 807
Mg (mg)	290	286 ± 72*	246 ± 77

Values are mean±SD. *, p<0.05, **, p<0.01, compared with disease-free group

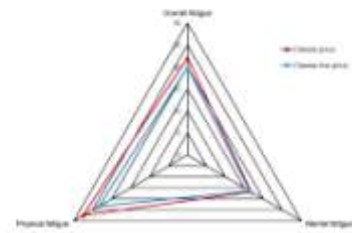


Fig.1 Complain score on fatigue

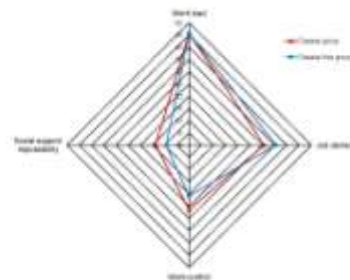


Fig.2 Complain score on work stress

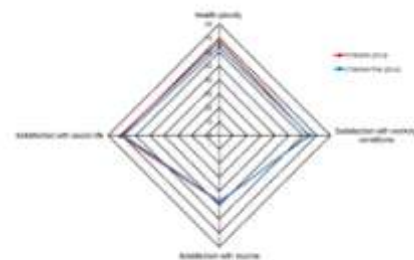


Fig.3 Complain score on satisfactions and health priority

Conclusions

1. Subjects were divided into the disease group and disease-free group.
2. Farmers in the disease group tended to have a higher level of physical fatigue and work stress.
3. In the disease group, working time was smaller and rest time was higher than those in the disease-free group.
4. Health conditions may affect fatigue among elderly female agricultural workers.
5. Further study on a larger number of subjects is required.

5. 主な発表論文等

(研究代表者、研究分担者及び連携研究者には下線)

[雑誌論文] (計 2 件)

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