Difficulties in the evaluation of hirsutism using the modified Ferriman-Gallwey scale

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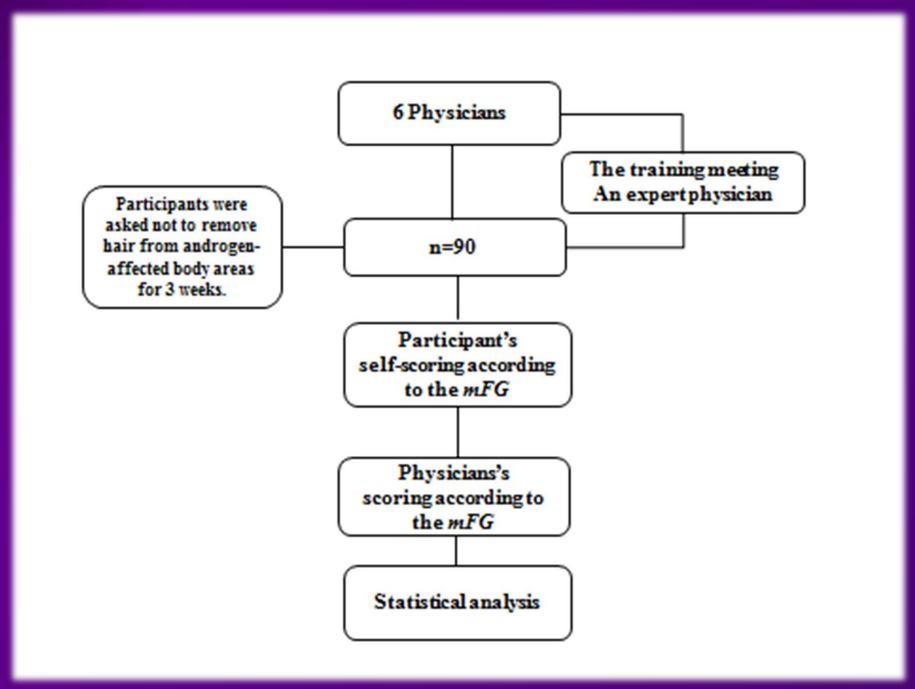
Introduction

Inconsistences in hirsutism evaluation using *The Modified Ferriman-Gallwey scale (mFG)* between different evaluators and need for hirsutism diagnostics standardization has been reported in numerous publications.

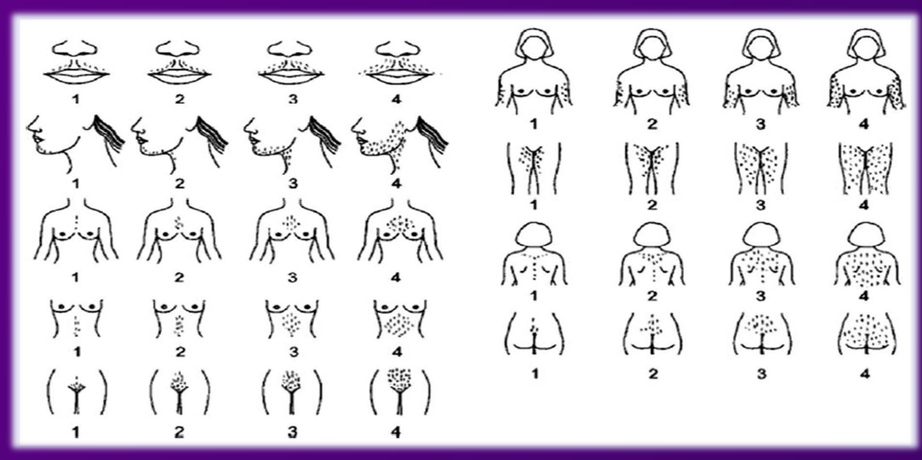
The aim of the study was to determine the differences in the evaluation of female hirsutism between researchers.

Materials and methods. The study was conducted during the period March- June of 2013. The study was carried out by 6 physicians– one specialist in female hyperandrogenism (an expert physician), and five– with no such experience. At the beginning of the study, the expert physician trained other researchers in the evaluation of terminal hair growth using *mFG* scale. The study included 90 women who presented to the endocrinologist's consultation due to different reasons except hyperandrogenism and met the inclusion criteria. The subjects underwent anthropometric measurements, and were asked to perform self-evaluation of hirsutism according to the *mFG* scoring method. Following that, hirsutism was evaluated by the physicians-researchers using the same *mFG* scoring method.



Results. The study included healthy 20-34 year-old (mean age 25.2 years, 95% CI 23.8-26.5) women with regular menstrual cycles. The total mean score of the subjects' self-evaluation was 7.0, 95% CI 4.6-9.3. The total mean score of the evaluation given by the researchers was 2.81, 95% CI 1.5-4.2. The odds ratio for erroneous evaluation of hirsutism on the upper lip was 1.31 (95% CI 1.02–1.69), on the lower abdomen and the thigh- 5.44 (95% CI 4.23-7.02), and on the chest- 0.02 (95% CI 0.02-0.04).

1 Figure. The prevalence of hirsutism *(mFG scale)* in the study group.



2 Figure. Hirsutism scoring in each of nine body areas. The scores in each area are summed. If no excess terminal hairs are noted, then the area score is zero, (*Hatch et all., 1981*).

2 Table. Study population characteristics, n=90.

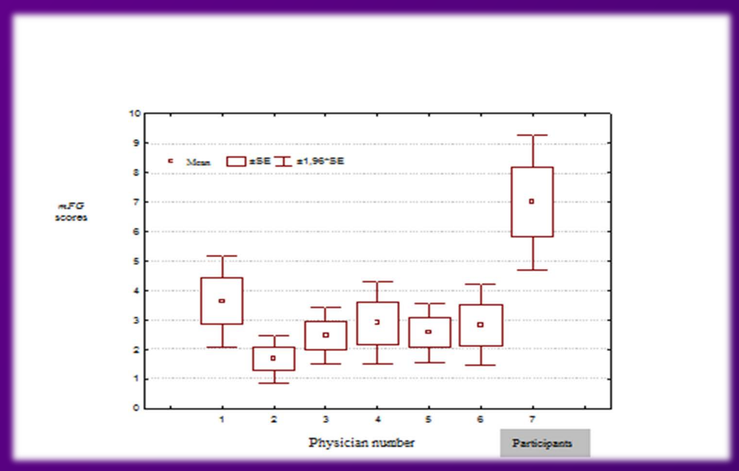
Parameters	Mean	95 % CI
Age, years	25.2	23.8-26.5
Height, cm	169	1.68-1.72
Weight, kg	63.3	59.7-66.9
Body Mass Index, kg/m²	22.03	20.8-23.2
Systolic Blood Ppressure, mm/Hg	117	115.2-118.7
Diastolic Blood Ppressure, mm/Hg	74.1	69.1-79.2
Waist circumference, cm	71.2	67.4-75.06
Hips, cm	97.9	95.4-100.4
Waist-hip ratio	0.72	0.7-0.75
The menstrual cycle lenght, days	29.2	28.5-29.1

3 Table. Laboratory parameters of androgen status, n=90.

Sex hormones	Mean±SE
SHBG, nmol/l	37.8±2.52
DHEAs, µmol/l	8.9±0.63
T, nmol/l	2.47±0.18
Free T, pmol/l	3.34±0.21
FAI (Free Androgen Index)	8.05±1.09

4 Table. Reference interval given by manufacturer (The range is based on 2.5 % and 97.5 % percentiles).

Parameter	Manufacturer	Subjects (age group)	Unit	Range	Median	Number of cases
T	"DiaSource", Belgium	Premenopausal	nmol/l	0,7- 2,67	1,04	66
Free T	"DiaSource", Belgium	20-39 years	pmol/l	<0,45-10,7	3,30	-
DHEAs	"DiaSource", Belgium	20-24 years	µmol/l	3,22-11,62	6,61	16
		25-29 years		1,9- 11,2	5,35	33
		30-34 years		2,04-10,8	4,74	29
SHBG	"ZenTech", Belgium		nmol/l	20-85	-	49



3 Figure. The differences in the evaluations of terminal hair grow between the physicians and participants.

5 Table. A mismatch in the evaluations between physicians using the *mFG* scale.

Body areas	A mismatch in the evaluations (%)	OR	95 % CI
1. Upper lip	47	1.31	1.02-1.69
1. Chin	23	0.09	0.08-0.12
1. Chest	13	0.02	0.02-0.04
1. Upper back	17	0.04	0.04-0.06
1. Lower back	23	0.09	0.08-0.12
1. Upper abdomen	37	0.34	0.27-0.44
1. Lower abdomen	70	5.44	4.23-7.02
1. Upper arms	27	1.13	0.11-0.18
1. Thighs	70	5.44	4.23-7.02

6 Table. The *mFG* scores given by physicians.

Physician number	The mFG score Mean	95 % CI
1	3.6	2.01-5.24
2	1.7	0.8-2.5
3	2.4	1.4-3.5
4	2.9	1.4-4.3
5	2.5	1.5-3.6
6	2.8	1.4-4.2
Total score	2.8	1.5-4.2

1 Table. Evaluation of hirsutism using *The Modified Ferriman-Gallwey* (*mFG*) scoring method.

Body areas	Degree	Explanation
Upper lip	1	A few isolated hairs on the outer edge of the lip
	2	Small mustache on the outer edge of the lip
	3	Moustache, occupying half the distance from the outer edge of the lip to lip mid
	4	Moustache by mid-lip
Chin	1	A few isolated hairs
	2	Small individual tufts of hair
	3	Lightly covers the entire chin
	4	Densely covers the entire chin
Chest	1	Hair on the nipples
	2	Hair still growing on the sternum area
	3	The interrelation of these places, the hair covering ¾ chest
	4	Hair covering the entire chest
Upper back	1	A few isolated hairs
	2	Much more, however, are still isolated
	3	Lightly covers the entire surface
	4	Grossly covers the entire surface
Lower back	1	Tuft of hair on the sacrum
	2	Much more widespread
	3	Covers ¾ of the surface
	4	Covers the entire surface
Upper abdomen	1	A few isolated hairs in the middle line
	2	Much more, but still in the middle line
	3	Covers half of the surface
	4	Covers the entire surface
Lower abdomen	1	A few isolated hairs in the middle line
	2	Strip of hair in the middle line
	3	Lane of hair in the middle line
	4	The inverted V shaped hair growth
Upper arms	1	Rare hair, covering not more than ¼ of the surface
	2	More hair, but not all areas are covered
	3	Lightly covers the entire surface
	4	Grossly covers the entire surface
Thighs	1	Rare hair, covering not more than ¼ of the surface
	2	More hair, but not surface is covered
	3	Lightly covers the entire surface
	4	Grossly covers the entire surface

Conclusions: A discrepancy was found between the evaluations submitted by the expert physician and one of evaluators, whereas the differences between the evaluations presented by the other researchers were not significant. The women who participated in the study significantly more frequently submitted higher *mFG* scores when evaluating their hirsutism than the researchers did. The greatest differences between the evaluations of hirsutism were found on the upper lip, the lower abdomen, and thighs. Extensive training is needed before starting use *The Modified Ferriman-Gallwey scale* in order to get reliable results of hirsutism evaluation.

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