

“A case-control study on tobacco and alcohol addicted subjects: perceiving oral health”

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Abstract

The aim of this work is to evaluate how alcohol and tobacco addicted and not addicted patients perceive the importance of Oral Health, taking care of their Oral Hygiene.

In the last five years we analysed 146 subjects (73 addicted and 73 not addicted of both sexes having for both groups the same age range for males and females) that underwent dental treatment in our private clinic.

The result we obtained shows how women, both addicted or not addicted, perceive more than men the importance of Oral Health.

We also analysed in those subjects the presence of 6 diseases: Stomatitis, Aftae, Candidosis, Leukoplakia, Erythroplakia, and Cancer.

Material and Methods

In our study we evaluated 73 alcohol and tobacco addicted subjects (56 males and 17 females), called **group A**, and 73 not addicted subjects (56 males and 17 females), called **group B**.

All 56 males of **group A** were alcohol misusers and 42 of them were also heavy smokers (more than 30 cigarettes /day) and the range age was 45-65. The 17 females of group A had a range age of 37-57, only 3 were alcohol addicted and all 17 were heavy smokers.

Of all those subjects we investigated the history of their misusing and the presence of systemic diseases.

We also registered the DMF-T of each patient of groups A and B and introduced three new indexes to evaluate the oral health.

- **THI**: Teeth Health Index expressing the value between Decayed +Missed teeth / Healthy and Filled Teeth
- **PeHI**: Periodontal Health Index expressing the value between sockets deeper then 3 mm / # of teeth
- **OHI**: Oral Health Index expressing the value of **THI + PeHI**. This value helps us to evaluate how much the patients take care of his mouth and of its hygiene.

The perfect value of those indexes is 0 and it means an optimal oral health

Results

In **Tab 1** we show the range value of alcohol and cigarettes consumptions in group A, and at first sight we can see how in women the addiction has a lower degree than in men. This difference will result in better oral conditions of women respect to men, both in groups A and B, as showed in the following tables.

Sex and age group	Alcohol consumption per day (g) range value	Cigarettes consumption per day range value
Male 45-50	85-90	31-35
Male 51-55	90-100	35-40
Male 56-60	120-150	40-45
Male 61-65	150-230	35-40
Female 37-42	75-85	28-32
Female 43-47	85-100	32 38
Female 48-52	100-130	38-45
Female 53-57	130-180	45-50

Males	H	H	D	D	M	M	F	F	THI	THI
45-50 (14)	145	242	152	84	99	58	52	64	1.27	0.46
51-55 (14)	138	225	185	93	103	63	22	67	1.80	0.53
56-60 (15)	127	232	149	109	117	68	87	71	1.24	0.58
61-65 (13)	58	93	176	78	135	94	47	151	2.96	0.70

Females	H	H	D	D	M	M	F	F	THI	THI
37-42 (3)	45	51	21	15	6	3	24	27	0.39	0.23
43-47 (4)	36	46	18	20	20	10	54	52	0.42	0.30
48-52 (5)	30	50	24	30	31	23	75	57	0.52	0.49
53-57(5)	16	42	22	31	41	30	81	57	0.64	0.61

Legenda: H – healthy teeth; D – decayed teeth; M - missed teeth; F – filled teeth

Red: Group A; Blue: group B

THI: Teeth Health Index = M+D/H+F

In **Tab 3** we reported how many sockets there were for range of age, group and sex, grouping the socket in 3 range of values (<3 mm, >3 and <6 mm, > 6 mm). The recording of these values was done each time from the same clinician to be sure that they were taken, as much as possible, with the same testing pressure (20-25 g) using Michigan Probes (Williams degrees).

Number of sockets for groups of age

Males age range/depth of sockets	<3	<3	>3<6	>3<6	>6	>6	PeHI	PeHI
45-50 (14) [349] [390]	64	154	156	156	129	80	0.81	0.60
51-55 (14) [345] [385]	68	126	153	143	124	116	0.80	0.67
56-60 (15) [363] [412]	81	125	154	153	128	134	0.77	0.69
61-56 (13) [261] [322]	39	57	102	104	120	161	0.85	0.82

Females age range/depth of sockets	<3	<3	>3<6	>3<6	>6	>6	PeHI	PeHI
37-42(3) [90] [93]	67	70	27	20	6	3	0.36	.024
43-47 (4) [108] [118]	60	79	37	32	11	7	0.44	0.33
48-52 (5) [129] [137]	58	70	59	44	12	23	0.55	0.48
53-57 (5) [119] [138]	33	55	66	67	20	17	0.72	0.60

Legenda: in red are indicated the numbers of sites for group A and in blue for group B

PeHI: Periodontal Health Index = # sockets >3 mm/ # of sites

In **Tab 4** we reported the values of THI, PeHI and OHI for groups A and B, males and females; Here we put evidence on the difference of perceiving oral health in addicted and not addicted and males and females.

In fact if in the age range 45-50 of group A we have an OHI of 2.08 (with a THI of 1.27) in group B the OHI value is much more deeper (1.06) with a THI value of 0.46; this means that in this range of age males take less attention or oral health in group A than in group B. It is also interesting that in the age range 56-60 there is a decrease of THI and OHI due to the increase of missed teeth and the decrease of decayed teeth but also for an increase of filled teeth demonstrating that at this range of age males perceive a little more the importance of oral health. Comparing these records with those of females we see that in the last one there is not an increase of this perceiving.

Only in the last age range of both sexes and of both groups we can report the evidence of an important decrease of the perceiving of oral health.

Males age range	PeHI	THI	OHI	PeHI	THI	OHI
45-50	0.81	1.27	2.08	0.60	0.46	1.06
51-55	0.80	1.80	2.60	0.67	0.53	1.20
56-60	0.77	1.24	2.01	0.69	0.58	1.27
61-65	0.85	2.96	3.81	0.82	0.70	1.52

Females age range	PeHI	THI	OHI	PeHI	THI	OHI
37-42	0.36	0.39	0.75	0.24	0.23	0.47
43-47	0.44	0.42	0.86	0.33	0.30	0.63
48-52	0.55	0.52	1.07	0.48	0.49	0.97
53-57	0.72	0.64	1.36	0.60	0.61	1.21

Legenda: in red are indicated the numbers of sites for group A and in blue for group B
 OHI: Oral Health Index = THI + PeHI

In **fig 1** we report on Histograms the comparison of THI, PeHI and OHI values in both groups for males and females, to better appreciate the difference in perceiving oral health.

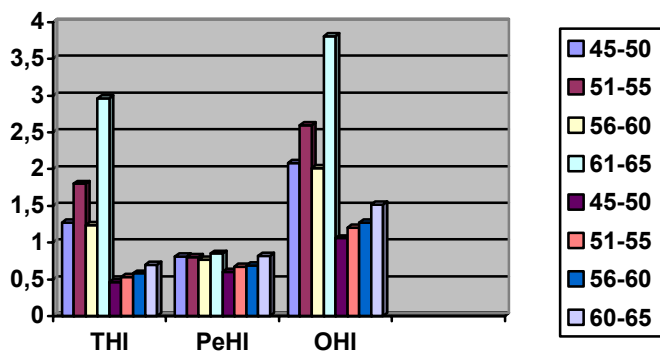


Diagram of THI, PeHI, OHI for Group A and B males

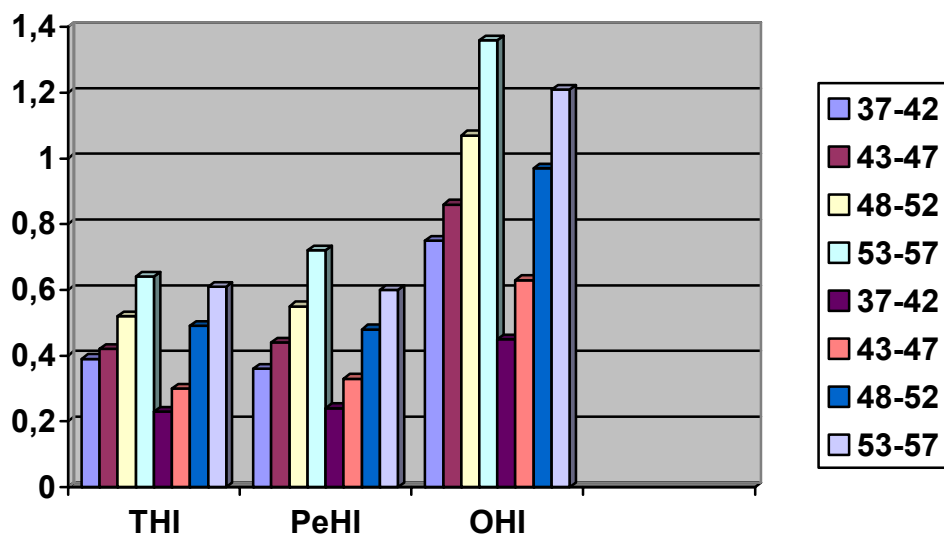
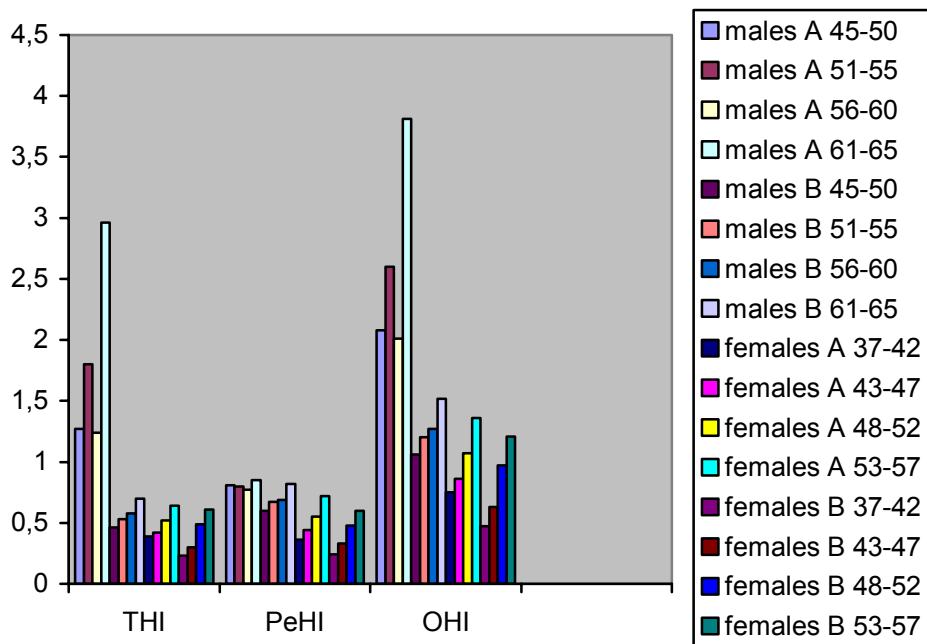
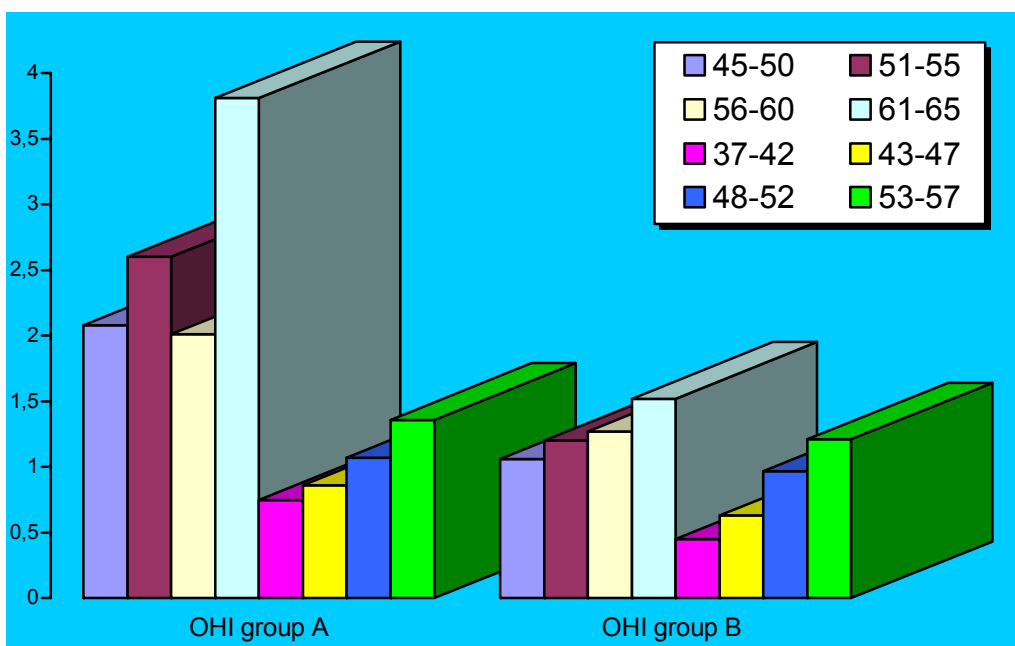


Diagram of THI, PeHI, OHI for Group A and B females

In **fig 3** we report the evolving of this perception of Oral Health of all groups together to better show how in women there is an higher perception and also how this perception has a continuous decreasing with the increasing of age for both groups A and B. Males instead show, for both groups, and increasing of perception of oral health between 51 and 60 years,



In **fig 4** we can better evaluate that not addicted subjects had a better perception of Oral Health, and that with the aging there is a decrease of this perception in both groups A and B. Only between the last two age ranges of addicted females there is a little variation of tendency, due to the decrease of sockets < 3 mm, of healthy teeth, of decayed teeth and the increase of missed and filled teeth, but this difference is so low that could not be considered meaningful.



In **Tab 5** we reported the number of patients affected by the researched pathologies for both group and sexes, also reporting the sites of involvement of the leukoplasic and erythroplastic lesions we have observed in those patients

Pathologies/male groups	A	A	B	B	C	C	D	D
Stomatitis	3	1	4	2	3	2	3	1
Aftae	5	2	7	4	4	3	3	2
Candidosis	3	1	5	4	6	7	7	6
Leukoplakia	1	0	2	0	2	1	3	1
Erythroplakia	0	0	0	0	2	1	2	1
Cancer	0	0	0	0	0	0	1	0

Pathologies/female groups	A	A	B	B	C	C	D	D
Stomatitis	0	0	1	0	1	1	0	0
Aftae	1	0	1	1	1	0	0	1
Candidosis	0	0	1	0	1	1	0	1
Leukoplakia	0	0	0	0	0	0	1	0
Erythroplakia	0	0	0	0	1	0	1	1
Cancer	0	0	0	0	0	0	0	0

Location of Leukoplasic and Erythroplastic lesions

Location	Group A	Group B
Ventral and lateral tongue	3	1
Retromolar trigone	5	0
Buccal mucosa	0	2
Hard palate	1	0
Soft palate	2	0
Floor of the mouth	4	2

Legenda: Red: addicted; Blue: not addicted

Discussion

The results of our study put the evidence that tobacco and/or alcoholic addicted people perceive more less than not addicted the importance of oral health and hygiene, and at the same time that women have a higher perception of the importance of oral health than men.

Addicted people has a risk of severe damages at the oral structure much more higher then not addicted due to the action of tobacco and alcohol.

It has been well demonstrated the strict relationship between smoke and loss of periodontal attachment and also between smoke and precancerous lesions (1,2,3,4,5,6,7,8)

The same relationship has also been demonstrated to have alcohol due to the effects of ethanol on bone and periodontal structures (9,10,11,12,13,14)

These two addictions, put together, have a super multiplicative effect for mouth, additive effect for larynx and multiplicative effect for oesophagus for the developing of squamous cell carcinomas.

As we reported, on 146 patients 20 were affected by erythroplastic and leukoplasic lesions and 17 of them were tobacco and alcohol addicted (85,00%).

On 146 patients 1 male was affected by Oral Cancer (age range 61-65 alcohol and tobacco addicted).

This shows one time more that addicted people have a higher risk to develop precancerous lesion than not addicted.

So it becomes very important to put more attention in evaluating alcohol and tobacco misusers to prevent this pathology.

To examine the suspected precancerous lesion we followed our examination protocol:

1) We used a dental mirror, which is rigid and better tolerated by the patient, to evaluate the intraoral mucosal surfaces, using also a dental lamp to have a better intensity and colour balance for a better appreciating of eventual mucosal alterations.

2) To examine the posterior floor of the mouth, the retromolar trigone and the nearer structures, we grasped the anterior part of the tongue with a sponge gauze, and moved the tongue in all the possible directions withdrawing it also as far as possible out of the oral cavity.

We also elevated the posterior floor of the mouth applying an external pressure in proximity of the submandibular gland and we evaluated also for cervical adenopathy.

The erythroplastic lesions we reported were mostly asymptomatic, predominantly red, inflammatory with atrophic alteration, less then 2 cm and with granular aspect; only in 2 case the patients referred a burning sensation. (15,16,17,18)

The leukoplasic lesions presented mostly as a slight elevated with plaque well defined.

3) We checked the patients again after 14 days to evaluate the erythroplastic/leukoplasic lesion one time more. In those two weeks we invited the non-addicted subjects to pay attention on cheek chewing, tongue chewing, mastication and using of particular toothpaste or oral rinses containing extract of “**sanguinaria**” (19,20,21) and treated them with chlorexidine rinses.

After two weeks of the 9 erythroplastic lesion the 3 referred to the non addicted subjects showed steps of remission, showing that they were not precancerous lesions but only conditions related to other factors.

At the same time 3 of the erythroplastic lesions referred to the addicted subjects showed little steps of remission.

Only 2 lesions were suspected to be a precancerous lesion, and we decided to check them again after another week with oral rinses with blue of toluidine, which clinically stain the malignancies. (22,23) At getting the positive response of precancerous lesion we decided to hospitalise the patients for the specific treatment.

The leukoplasic lesion were also evaluated after 2 weeks and 8 of them showed steps of remission; in fact one was related to a cheek chewing and the other two to a friction against a decayed teeth. After the filling of the decays this leukoplasic area disappeared completely in less of two months.

Conclusion

It is clear, as resulting from our study, that it is very important to manage with much attention the subjects that are addicted to alcohol, tobacco or other substances, because more than others they can involve in severe damages of the oral structures not only for teeth and gums but also for the higher risk to involve cancerous lesion.

At first it becomes important to obtain a good compliance from the patients to reduce much more the possible all the factors that could determine the insurgence of oral diseases, starting at first from a good oral hygiene and then going on with resolving their wrong attitudes.

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Sex and age group	Alcohol consumption per day (g) range value
Male 45-50	85-90
Male 51-55	90-100
Male 56-60	120-150
Male 61-65	150-230
Female 37-42	75-85
Female 43-47	85-100
Female 48-52	100-130
Female 53-57	130-180

Cigarettes consumption per day
range value
31-35
35-40
40-45
35-40
28-32
32-38
38-45
45-50

Males	H	H	D	D	M	M	F	F
45-50 (14)	145	242	152	84	99	58	52	64
51-55 (14)	138	225	185	93	103	63	22	67
56-60 (15)	127	232	149	109	117	68	87	71
61-65 (13)	58	93	176	78	135	94	47	151

Females	H	H	D	D	M	M	F	F
37-42 (3)	45	51	21	15	6	3	24	27
43-47 (4)	36	46	18	20	20	10	54	52
48-52 (5)	30	50	24	30	31	23	75	57
53-57(5)	16	42	22	31	41	30	81	57

THI	THI
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1:24	0:58
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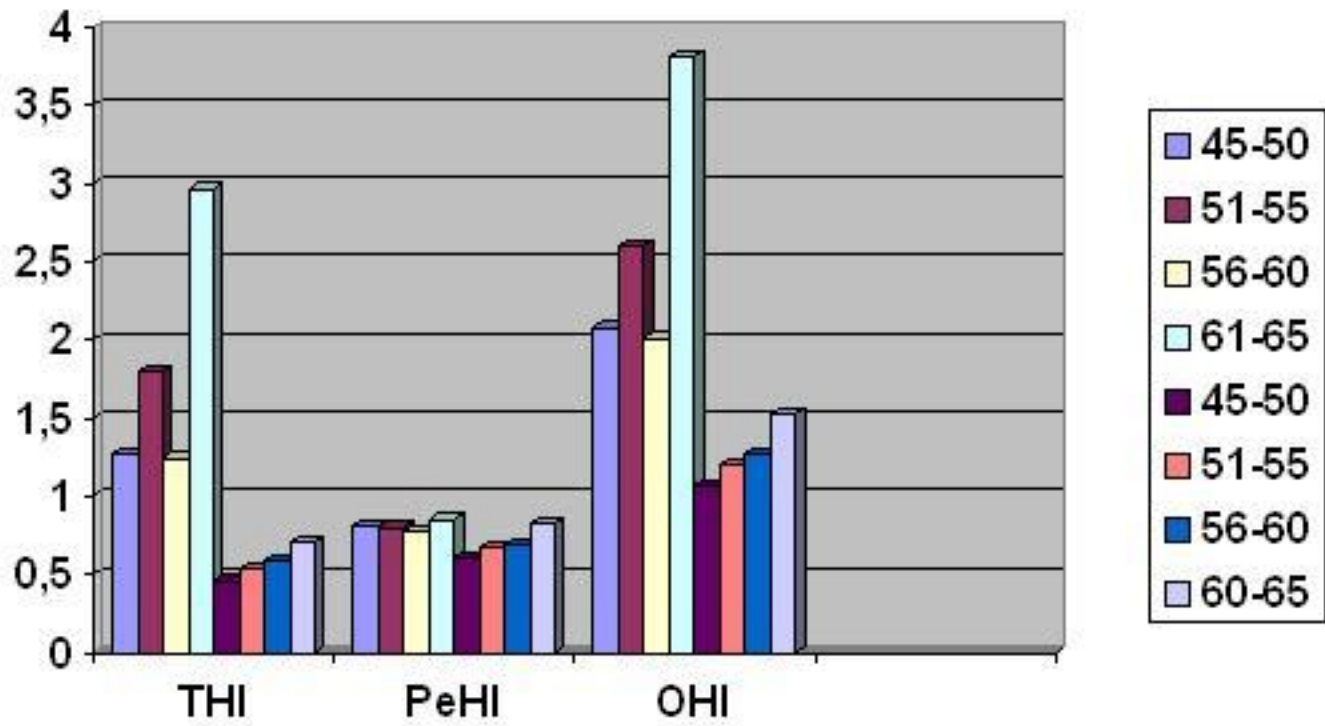
THI	THI
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0:52	0:49
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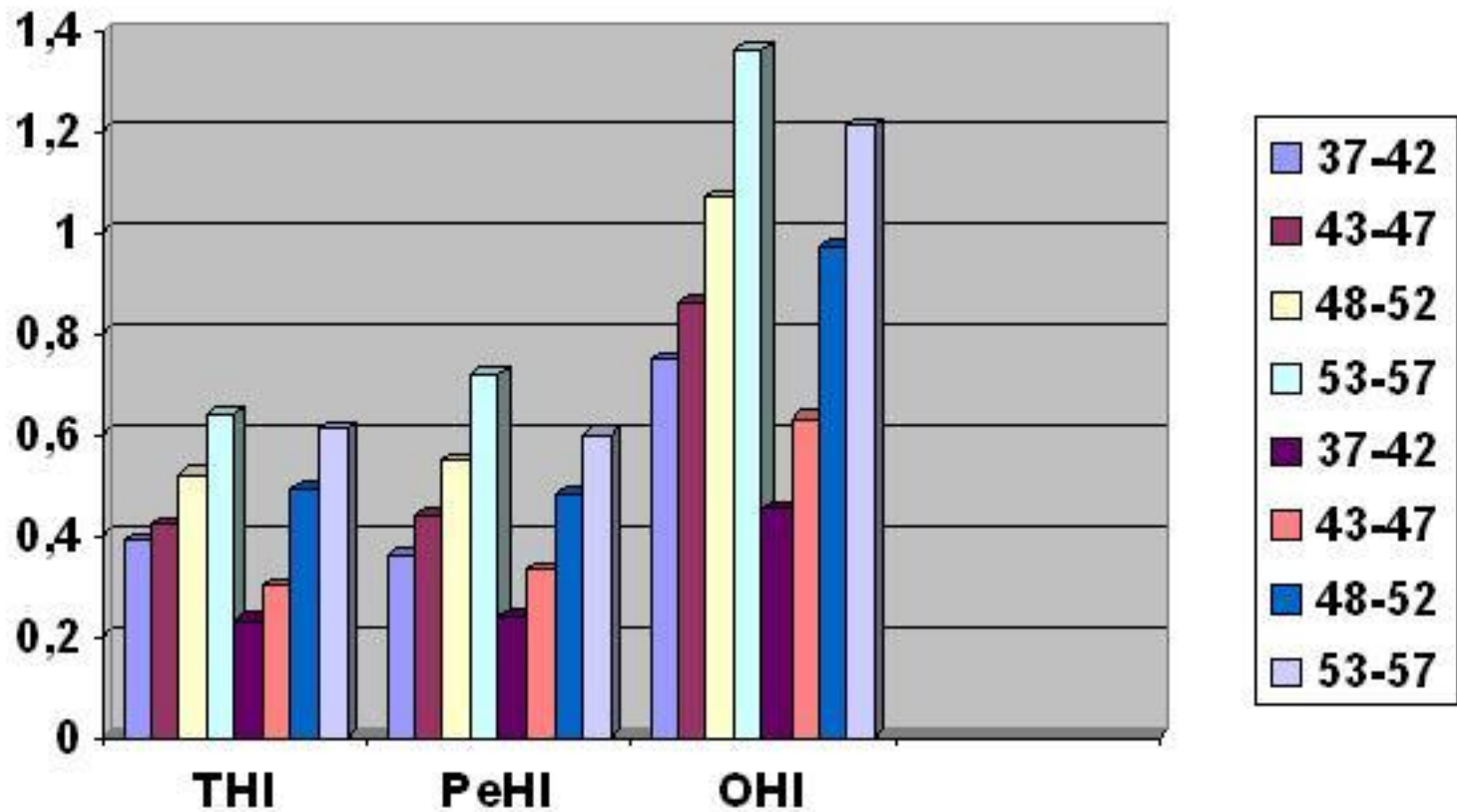
Males age range/depth of sockets	<3	<3	>3<6	>3<6	>6	>6	PeHI	PeHI
45-50 (14) [349] [390]	64	154	156	156	129	80	0.05625	0.0416667
51-55 (14) [345] [385]	68	126	153	143	124	116	0.0555556	0.0465278
56-60 (15) [363] [412]	81	125	154	153	128	134	0.0534722	0.0479167
61-56 (13) [261] [322]	39	57	102	104	120	161	0.0590278	0.0569444

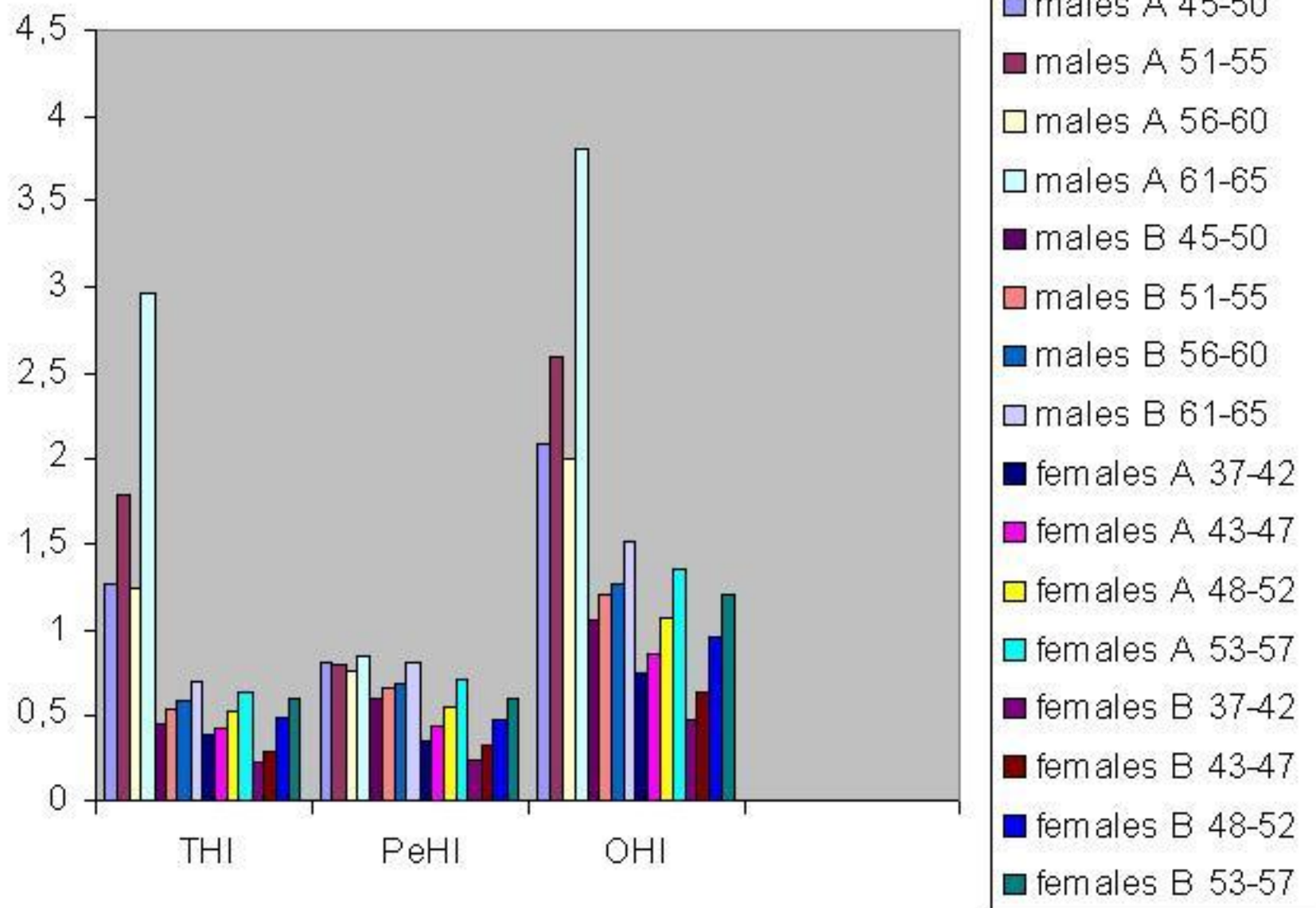
Females age range/depth of sockets	<3	<3	>3<6	>3<6	>6	>6	PeHI	PeHI
37-42(3) [90] [93]	67	70	27	20	6	3	0:36	.024
43-47 (4) [108] [118]	60	79	37	32	11	7	0:44	0:33
48-52 (5) [129] [137]	58	70	59	44	12	23	0:55	0:48
53-57 (5) [119] [138]	33	55	66	67	20	17	0.05	0.0416667

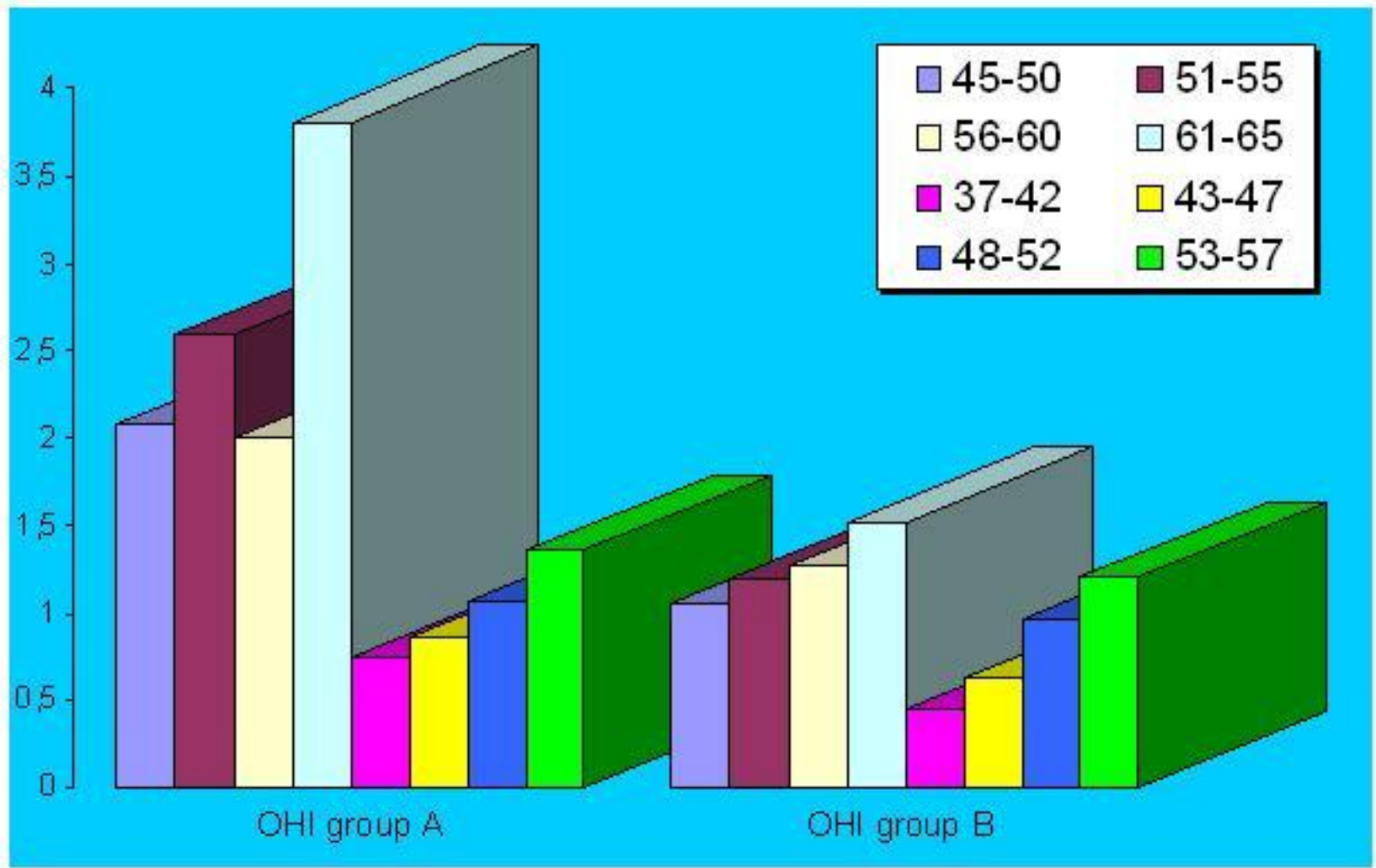
Males age range	PeHI	THI	OHI	PeHI	THI	OHI
45-50	0.05625	1:27	2:08	0.0416667	0:46	1:06
51-55	0.0555556	0.0972222	0.125	0.0465278	0:53	1:20
56-60	0.0534722	1:24	2:01	0.0479167	0:58	1:27
61-65	0.0590278	0.15	0.18125	0.0569444	0.0486111	1:52

Females age range	PeHI	THI	OHI	PeHI	THI	OHI
37-42	0:36	0:39	0.0520833	0:24	0:23	0:47
43-47	0:44	0:42	0.0597222	0:33	0:30	0.04375
48-52	0:55	0:52	1:07	0:48	0:49	0.0673611
53-57	0.05	0.0444444	1:36	0.0416667	0.0423611	1:21









Pathologies/male groups	A	A	B	B	C	C
Stomatitis	3	1	4	2	3	2
Aftae	5	2	7	4	4	3
Candidosis	3	1	5	4	6	7
Leukoplakia	1	0	2	0	2	1
Erythroplakia	0	0	0	0	2	1
Cancer	0	0	0	0	0	0

Pathologies/female groups	A	A	B	B	C	C
Stomatitis	0	0	1	0	1	1
Aftae	1	0	1	1	1	0
Candidosis	0	0	1	0	1	1
Leukoplakia	0	0	0	0	0	0
Erythroplakia	0	0	0	0	1	0
Cancer	0	0	0	0	0	0

Location	Group A	Group B
Ventral and lateral tongue	3	1
Retromolar trigone	5	0
Buccal mucosa	0	2
Hard palate	1	0
Soft palate	2	0
Floor of the mouth	4	2

D	D
3	1
3	2
7	6
3	1
2	1
1	0

D	D
0	0
0	1
0	1
1	0
1	1
0	0