

Trends in food availability in CYPRUS – the DAFNE V project

E. Markidou¹, K. Onisiforou², A. Agrotou¹

¹ Department of Medical and Public Health Services, Ministry of Health

² Statistical Service of the Republic of Cyprus

Introduction

Long-standing research has shown that diet has an impact on the initiation, development and progression of chronic disease such as diabetes, cardiovascular disease and obesity. Healthy nutritional habits, along with physical activity, can prevent the development of these conditions.

The identification of dietary habits is a prerequisite in assessing the nutritional status of the population and is used by Governmental Services to plan, implement and monitor national food and nutrition policies in the context of health promotion. In Cyprus there are no national nutrition studies collecting food consumption data. Nevertheless, there is an increasing number of small studies undertaken by certain institutions of the private sector. These studies are usually time and population-specific and they are conducted neither on a national nor on a routine basis. At country level, the Cypriot Ministry of Health has recently launched the first national nutrition study.

Because of the lack of regular information on the food consumption of the Cypriot population, data can be retrieved from two alternative sources: (1) the national Household Budget Surveys (HBS), conducted by the Statistical Office and (2) the Food Balance Sheets (FBS), based on data collected by the Agricultural Office and assembled by the UN Food and Agriculture Organisation.

Household budget surveys collect information on food consumption expenditure at household level. These surveys aim to provide information on the structure of consumption expenditure of each participating household and are conducted every 5 years using country representative samples. In Cyprus the first survey took place in 1966 and the next one is planned for 2008 (www.mof.gov.cy/cystat).

The fact that Cyprus does not collect, periodically, nutritional data makes the use of these surveys essential for the evaluation of the dietary habits of the country's population. Through participation in the Data Food Networking (DAFNE) project (Trichopoulou A et al, 2003), the Ministry of Health together with the National Statistical Office retrieved HBS data collected in Cyprus in 1997 and in 2003. With the help of the DAFNE coordinating centre, the data were harmonized and analysed in order to derive estimates on mean daily food availability for the overall population, as

well as for population sub-groups. In addition, through integration of the data in the European DAFNE databank, comparisons with other European countries were also feasible.

The present report aims to present trends in food availability in Cyprus from 1997 to 2003. Food availability is also monitored in relation to household's locality, composition, education and occupation of the household head.

Material and Methods

Material

Data from the two recent HBSs undertaken by the Cypriot Statistical Office in 1996-1997 (3308 participating households) and in 2003 (3599 participating households) were retrieved and analysed. The sample unit was defined as "one or more persons (related or not) who live together and share principal meals, in the sense that the household's food supply is obtained out of a common budget and have common arrangements for supplying basic living needs".

To capture seasonal variation in consumer's expenditure habits, the sample households are evenly distributed over a 12 month period from September 1996 to August 1997 and from February 2003 to January 2004. The reference period depends on the type of products, with 14 days being the period of reference for durable goods including foods and beverages. All the districts (urban and rural), in the government controlled area (Nicosia, Limassol, Larnaca, Famagusta and Paphos) excluding the Northern occupied part of Cyprus, were included. The available socio-demographic information includes education, occupation and income of the household members. Households of one person were also included. The response rate was quite high, up to 94.6%, in 1997 and 89.9% in 2003. Refusals were not substituted.

In the 2003 survey, 140 food items were recorded and 66 of them were presented in Official Publications [Family Budget Survey, 2003]. In 1997 the corresponding numbers were 135 and 64 (Family Budget Survey, 1997).

Methods

The data collected in the Cypriot HBS only refers to expenses for food acquisition. Therefore a specific methodology was developed and applied in order to convert money spent into acquired quantities.

The method for converting food expenditure to quantity data included the application of retail prices per unit weight, retrieved from three sources:

1. The Cypriot Statistical Office, providing prices per unit weight for approximately half of the recorded food codes (Source: Consumer Price Index Unit of the Statistical Service).
2. The Ministry of Commerce, through which monthly data on the price per unit weight of a number of food items were retrieved. For items that were available from both sources (Statistical Office and Ministry of Commerce) the level of difference was assessed.
3. Retail prices collected from outlets ranging from small local shops to supermarkets. Personnel from the Ministry of Health surveyed shelves in each shop taking note of retail prices per unit weight for the requested items. When the product was available in different brands (and thus in different prices), the average one was calculated. For each food item, retail prices were collected from three different shops/outlets and the mean value was estimated. Values were further adjusted to the survey year using the Consumer Price Index provided by the National Statistical Office and were finally applied to the expenditure data.

For selecting the conversion factors to be applied, the three sources were prioritized in the following order: (1) Cypriot Statistical Office, (2) Ministry of Commerce and (3) Adjusted retail prices.

Estimation of daily food availability

Individual availability was estimated under the assumption of equal distribution of food within the household and during the survey period.

Food availability was further estimated according to the following socio-demographic characteristics:

- the locality of the residence,
- the educational status of the household head,
- the occupation of the household head and
- the household's composition.

The locality of the residence was classified as:

- urban
- rural

The educational attainment of the household head was classified in the following three categories:

- Illiterate/Elementary education

- Secondary education
- Higher education

The occupation of the household head was classified under five categories:

- Manual
- Non-manual
- Retired
- Unemployed
- Other (e.g. students, housewives, invalid persons)

The household composition was categorized in 8 types:

- Households with one adult member
- Households with two adult members
- Households with one adult member and children (lone parents)
- Households with two adult members and children
- Households with adult and elderly members
- Households with children, adult and elderly members
- Households with one elderly member
- Households with two elderly members

The classification scheme aims at reflecting the number and the age of household members, with children being defined as up to 18 years of age, adults from 19-65 years of age and elderly as more than 65 years old. It should be noted that the above household types do not correspond to all combinations possible, but they were selected in an attempt to focus on households of public health interest.

Results for the groups of “*one adult member and children*” and “*adult, elderly and children*” were not reported due to the small number of classified households.

Results

Table 1 presents the mean availability of the 15 main DAFNE food groups in Cyprus by survey year. Cypriots consume relatively high quantities of vegetables, fruits, milk and milk products, as expected by a Mediterranean country. The daily availability of added lipids is also high due to the prevalent consumption of vegetable oils in the region. On the other hand, the consumption of meat is also high, reflecting the westernization of the population's eating habits.

Table 2 presents the mean food availability according to the educational attainment of the household head for both survey years. The mean daily food availability with respect to the degree of urbanization of the residence area, by survey year is presented in Table 3. The effect of the occupational status of the household head on the household's food choices, for both survey years is presented in Table 4. Finally, Table 5 presents the daily food availability of the Cypriot population according to specific household types.

Highly educated individuals are expected to adopt easier the messages for maintaining and improving their health status. Additionally, highly educated people are usually occupied in non-manual professions. This may explain the higher daily availability of fish, nuts, fruits and vegetables among households of highly educated, non-manual heads (Tables 2 and 4). Households of manual workers, probably reflecting increased energy requirements, reported higher amounts of meat, added lipids, cereals, milk and milk products. Households of retired heads reported higher food acquisitions for almost all food groups except nuts, alcoholic beverages, milk and milk products.

Figures 1 and 2 describe changes and % changes respectively in the mean availability of specific food groups from 1997 to 2003. Comparisons between the daily food availability, as depicted through HBS, in Cyprus (1997) and Greece (1998/99) are presented in Figure 3.

The changes presented in Figures 1 and 2 generally point towards a departure of the population from the traditional Mediterranean diet. Although still in high levels, a decrease has been observed in the availability of fruits and vegetables. A decrease in the availability of added lipids has also been observed, probably reflecting the population's attempt to reduce fat intake. Although not a component of the traditional diet, the mean daily availability of potatoes has also decreased and could be attributed to people's contemporary tendency to control body weight. The household availability of alcoholic and non-alcoholic beverages, as well as of sugar and sugar products has increased, arising issues for the rapidly increasing rates of obesity in Cyprus.

The decrease in the mean daily availability of meat reflects an attempt of the Cypriot people to adopt healthier food choices and might reveal consumers' confusion as deviations (decrease in fruits, vegetables and added lipids, which are primarily vegetable oils) and alignments (decrease in meat availability) to the traditional Mediterranean diet are simultaneously occurring.

To further highlight the effect of the education and occupation of the head to household's food choices, a set of graphs presenting disparities in the daily availability of selected food groups by the aforementioned socio-economic indicators are included in Annex I.

Discussion

Household Budget surveys are not primarily designed for nutritional purposes. An amount of information is however collected on a regular basis and can be used for nutrition purposes. The lack of data on quantities (grams or mL) of foods and beverages acquired by the households was an important limitation, which was however dealt with the application of a methodology, previously developed and evaluated in the DAFNE network (Friel S et al, 2001), and adopted to serve the characteristics of the country's situation. Most of the conversions were performed using official information from either the Statistical Office or from the Ministry of Commerce. For the fewer cases, however, where retail prices retrieved from the market were used, the available background information did not allow to account for variation in the households' preferences for a less over a more expensive shop or vice versa.

The collection of data on food quantities would facilitate future uses of the HBS data to monitor the food habits of the Cypriot population, so as to plan strategies to educate consumers on nutrition and thus contribute in dealing with obesity which is the fastest growing epidemic nowadays.

Trends in food availability in the period of 1997-2003, point towards a remarkable increase in the household availability of alcoholic and non alcoholic beverages (including fruit and vegetable juices), together with sugar and sugar products. Although these findings cannot be collated to choices when eating out, they point towards a westernization of the country's dietary habits with a potentially negative impact in the fight against obesity. In a survey undertaken in Cyprus by the Child Institute, among 1900 children (age 6-18 years), 9% of the girls and 10% of the boys were identified as obese and 13% of the girls and 17% of the boys were classified as overweight. In previous studies assessing the prevalence of obesity in the population, 27% of men and 18% of women were classified as obese and 44% of men and 29% of women were overweight.

Socio-economic differences in eating practices can be assessed through comparing food availability in households of different educational status. Education associates with the years of schooling and it can also reflect the level of income, a combination which relates to the level and the way an individual perceives and applies current nutritional advice. It is noted that as the educational level improves, the availability of fruits and vegetables decrease reflecting either a departure from traditional eating patterns of individuals of higher education (and probably of lower age) or more eating out of home among these households.

The lack of data on food consumed out of home is a known limitation of the HBS. Due to the increasing prevalence of eating out and changes in current lifestyle, this is an important issue that needs to be taken into consideration when interpreting findings.

The DAFNE project allowed the analysis and the post-harmonisation of the HBS data, providing thus a concise picture of the food habits and the time trends in the dietary choices of the Cypriot population. Furthermore, results are comparable to those of other countries allowing thus strategy planning at national, regional and international level.

References

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Trichopoulou A, Naska A, and the DAFNE III group. *European food availability databank based on household budget surveys -- the Data Food Networking initiative*. European Journal of Public Health 2003 Sep;13(3 Suppl):24-8.

Table 1: Overall mean food availability in Cyprus, by year (quantity/day/person).

FOOD GROUPS	1997	2003
Eggs (pieces)	0.22	0.17
Potatoes and products (g)	137	94
Pulses (g)	31	23
Nuts (g)	5.01	4.55
Cereals and cereal products (g)	288	301
Milk products (g)	333	336
Meat and meat products (g)	211	178
Vegetables (g)	293	284
Fish and seafood (g)	18	18
Fruits (g)	325	252
Lipids, added (g)	58	48
Beverages, alcoholic (ml)	26	32
Beverages, non alcoholic (ml)	348	384
Sugar and sugar products (g)	36	67
Fruit and vegetable juices (ml)	40	53

Source: The DAFNE databank

Table 2: Mean food availability in Cyprus, by year and educational level of the household head (quantity/ day/ person)

FOOD GROUPS	1997			2003		
	EE	SE	HE	EE	SE	HE
Eggs (pieces)	0.28	0.18	0.17	0.18	0.16	0.16
Potatoes and products (g)	177	113	96	139	81	63
Pulses (g)	41	25	20	32	21	16
Nuts (g)	4.44	5.06	6.32	4.2	4.53	5.01
Cereals and cereal products (g)	324	262	262	349	290	263
Milk products (g)	320	344	338	355	334	317
Meat and meat products (g)	235	198	181	221	162	152
Vegetables (g)	340	257	262	348	251	260
Fish and seafood (g)	18	19	19	17	17	20
Fruits (g)	347	304	320	282	236	240
Lipids, added (g)	75	46	45	66	43	33
Beverages, alcoholic (ml)	29	26	23	37	29	31
Beverages, non alcoholic (ml)	349	340	369	374	377	407
Sugar and sugar products (g)	42	32	29	87	60	53
Fruit and vegetable juices (ml)	34	42	48	47	57	54

EE: Illiterate/ Elementary education, **SE:** Secondary education, **HE:** Higher education

Source: The DAFNE databank

Table 3: Mean food availability in Cyprus, by year and locality of the dwelling (quantity/ day/ person)

FOOD GROUPS	1997			2003		
	Rural	Semi-Urban	Urban	Rural	Semi-Urban	Urban
Eggs (pieces)	0.25	N/A	0.21	0.16	N/A	0.17
Potatoes and products (g)	160	N/A	125	121	N/A	83
Pulses (g)	34	N/A	29	25	N/A	22
Nuts (g)	4.27	N/A	5.41	4.6	N/A	4.53
Cereals and cereal products (g)	305	N/A	279	327	N/A	291
Milk products (g)	331	N/A	334	352	N/A	330
Meat and meat products (g)	210	N/A	211	197	N/A	170
Vegetables (g)	290	N/A	295	285	N/A	283
Fish and seafood (g)	19	N/A	18	19	N/A	17
Fruits (g)	320	N/A	327	239	N/A	257
Lipids, added (g)	66	N/A	53	55	N/A	44
Beverages, alcoholic (ml)	27	N/A	26	37	N/A	30
Beverages, non alcoholic (ml)	339	N/A	354	354	N/A	397
Sugar and sugar products (g)	40	N/A	34	79	N/A	61
Fruit and vegetable juices (ml)	38	N/A	40	50	N/A	54

Source: The DAFNE databank

Table 4: Mean food availability in Cyprus, by year and occupational status of household head (quantity/ day/person)

FOOD GROUPS	1997			2003		
	Manual	Non-manual	Retired	Manual	Non-manual	Retired
Eggs (pieces)	0.23	0.18	0.28	0.14	0.15	0.26
Potatoes and products (g)	143	106	199	87	68	166
Pulses (g)	28	24	58	17	16	50
Nuts (g)	4.89	5.72	3.56	4.49	4.56	5.02
Cereals and cereal products (g)	284	260	378	285	269	402
Milk products (g)	338	326	332	333	321	369
Meat and meat products (g)	209	192	258	172	154	239
Vegetables (g)	271	265	434	243	247	448
Fish and seafood (g)	17	19	23	14	18	24
Fruits (g)	290	314	452	213	239	366
Lipids, added (g)	55	44	103	40	37	85
Beverages, alcoholic (ml)	30	23	28	35	28	41
Beverages, non alcoholic (ml)	326	347	416	335	398	452
Sugar and sugar products (g)	34	30	56	65	53	100
Fruit and vegetable juices (ml)	40	44	30	52	58	46

Source: The DAFNE databank

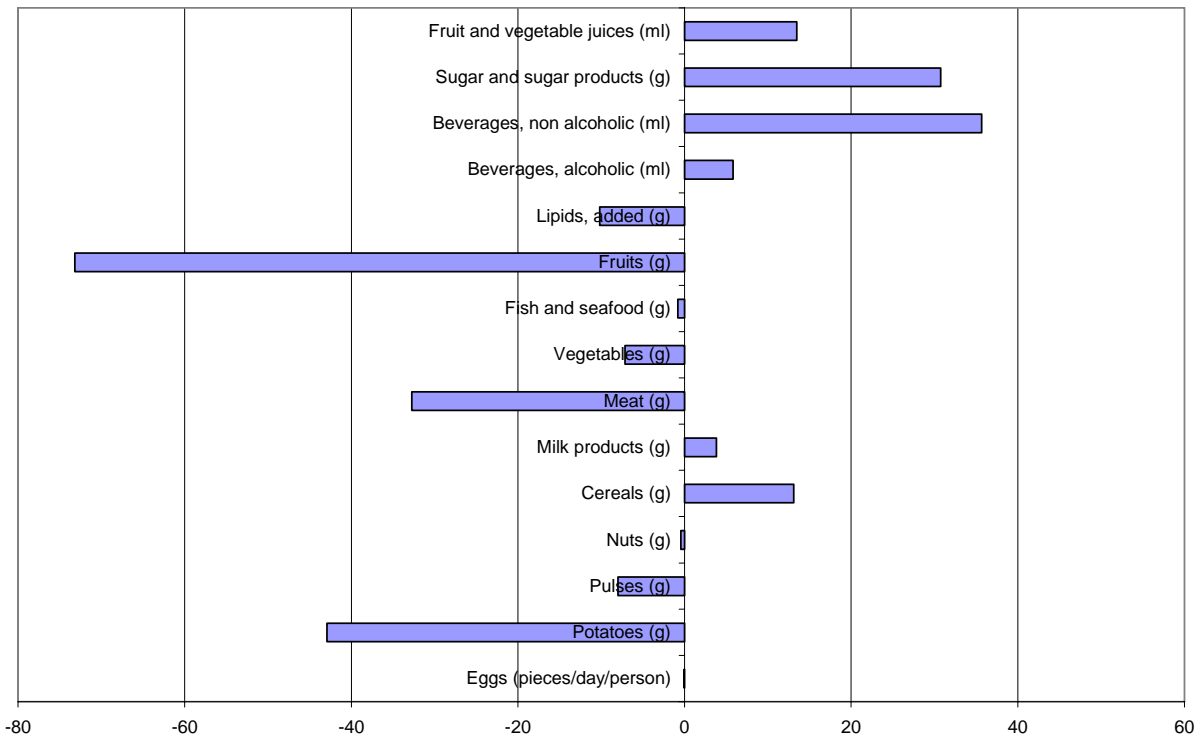
Table 5: Mean food availability in Cyprus, by year and household type (quantity/ day/ person)

FOOD GROUPS	1997							2003						
	One Adult	Two Adults	One Adult & one children	One Adult & one elderly	One Elderly	Two Elderly	Others*	One Adult	Two Adults	One Adult & one children	One Adult & one elderly	One Elderly	Two Elderly	Others*
Eggs (pieces)	0.34	0.39	0.10	0.30	0.37	0.31	0.24	0.23	0.24	0.13	0.24	0.34	0.24	0.18
Potatoes (g)	162	228	59	163	213	230	173	117	142	67	146	224	186	103
Pulses (g)	65	60	15	49	71	68	35	30	33	13	44	73	58	23
Nuts (g)	6.72	6.15	2.60	4.36	3.26	2.27	5.48	6.66	6.73	5.87	4.61	5.28	3.75	5.50
Cereals (g)	456	424	226	358	437	408	288	435	412	332	369	552	407	294
Milk products (g)	372	388	308	295	341	319	297	431	400	415	350	468	346	309
Meat (g)	242	340	121	251	265	260	240	203	282	139	223	291	244	207
Vegetables (g)	448	521	131	409	437	462	330	426	473	187	367	592	452	319
Fish and seafood (g)	26	30	9.58	22	17	21	20	20	32	10	24	21	24	16
Fruits (g)	581	513	142	404	478	453	384	426	377	190	315	427	354	290
Lipids, added (g)	95	101	23	94	134	95	62	74	69	36	66	143	95	48
Beverages, alcoholic (ml)	30	51	11	31	17	28	26	84	57	21	38	41	40	35
Beverages, non alcoholic (ml)	667	494	266	376	396	365	370	895	556	417	433	561	389	372
Sugar and sugar products (g)	71	49	23	51	81	54	37	108	98	46	86	170	96	69
Fruit and vegetable juices (ml)	55	40	37	28	26	21	39	82	53	69	45	48	42	49

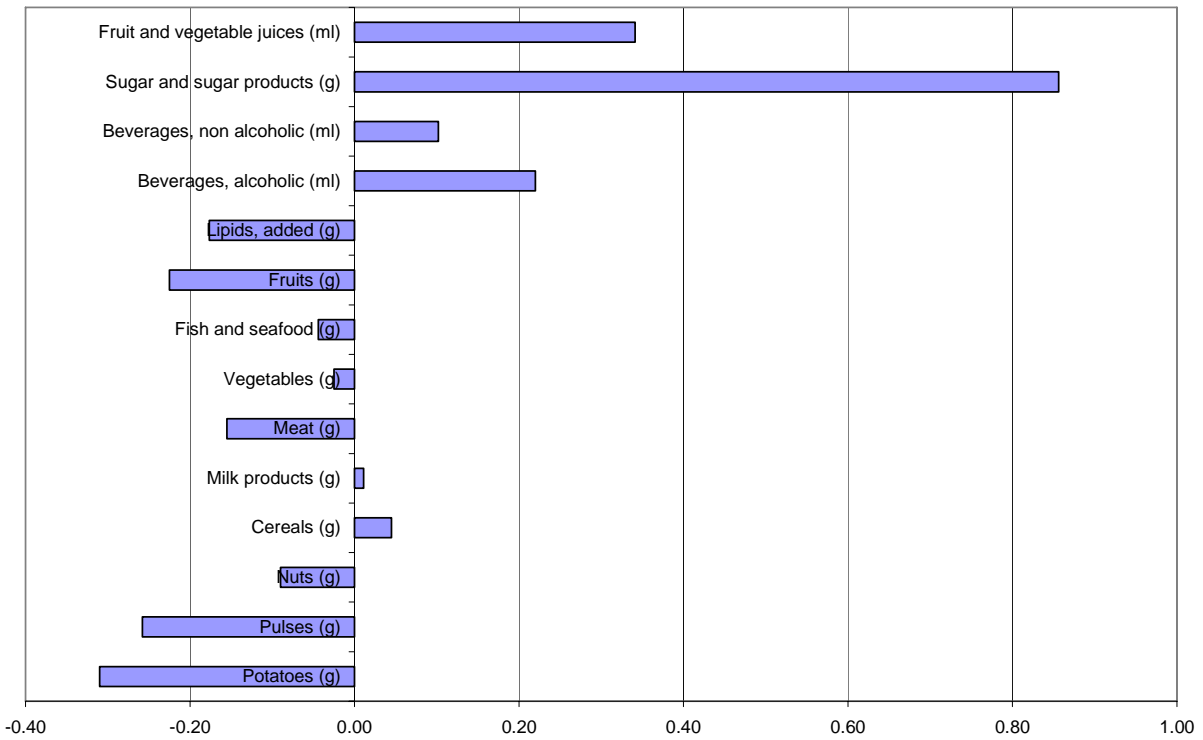
Source: The DAFNE databank

***others:** including housewives, soldiers, invalid persons

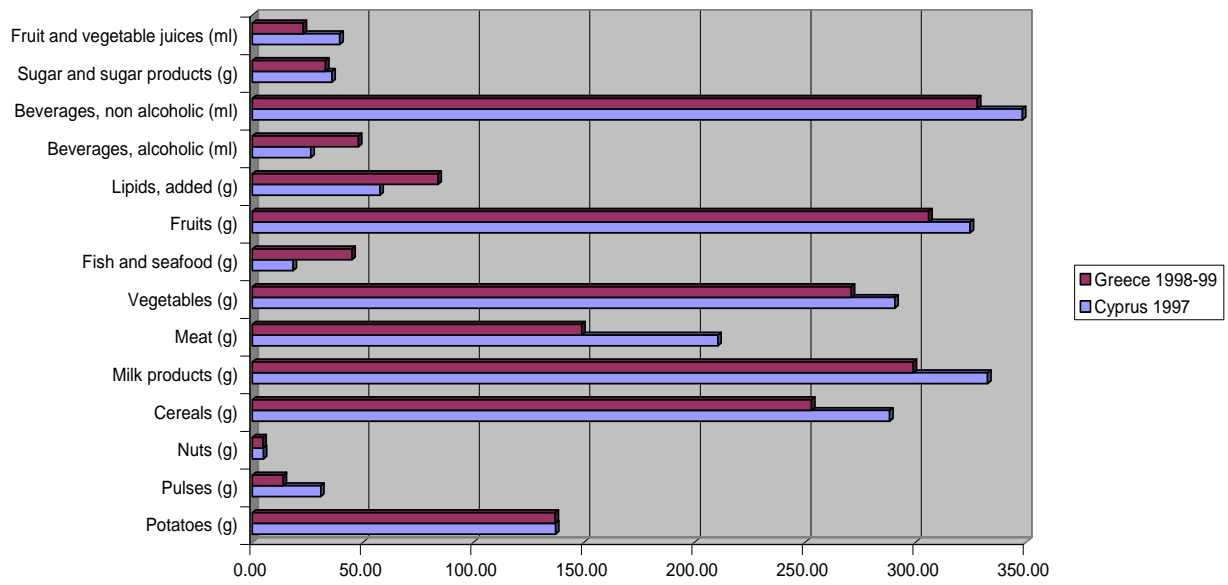
1. Change in mean food availability during the years 1997-2003 (g-ml/person/day)



2. Percent change in mean food availability during the period 1997-2003

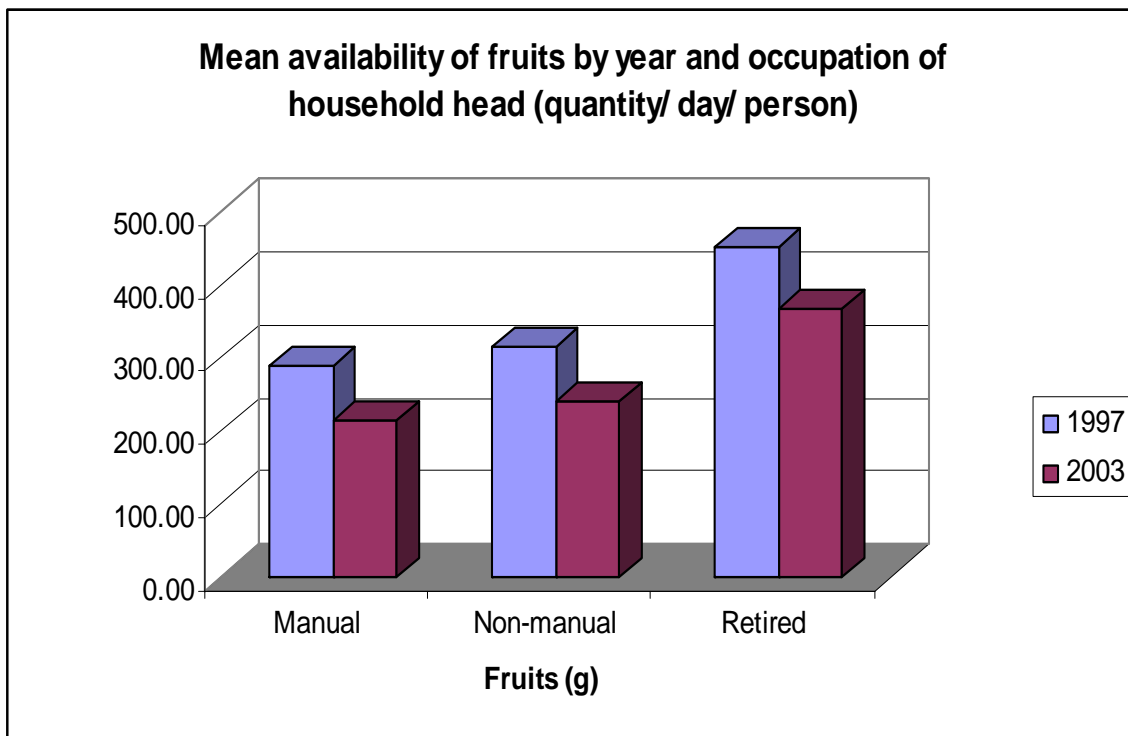
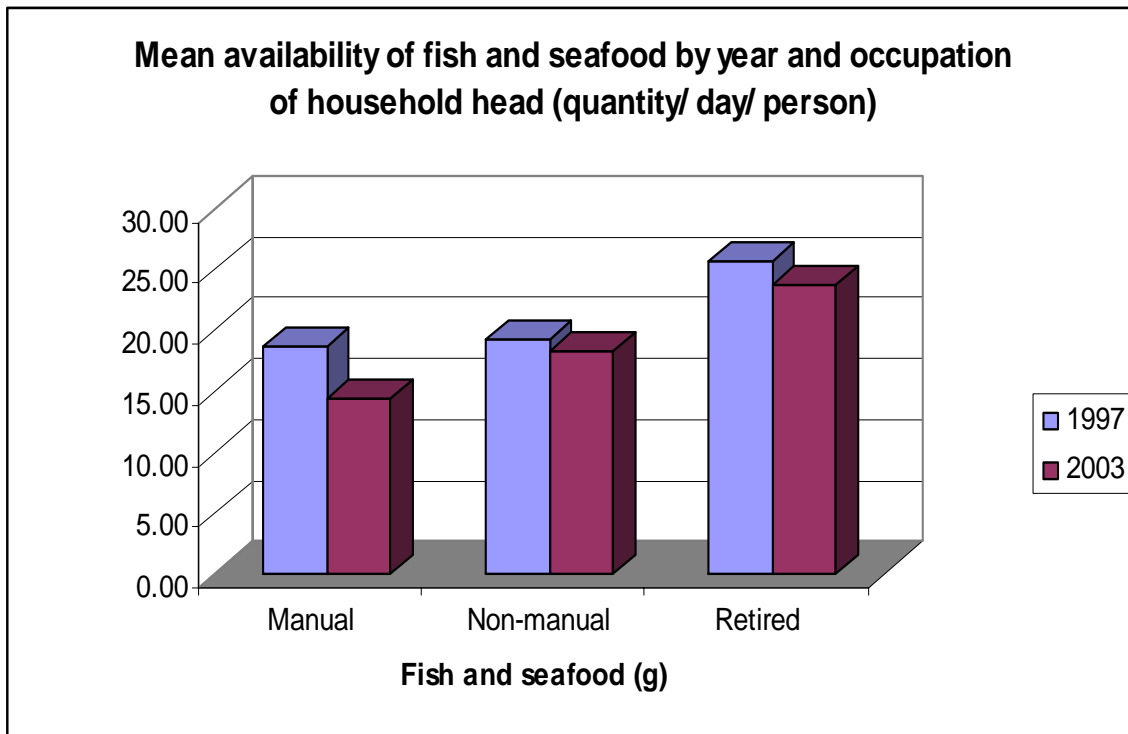


3. Food availability of Cyprus (1997) and Greece (1998-1999)

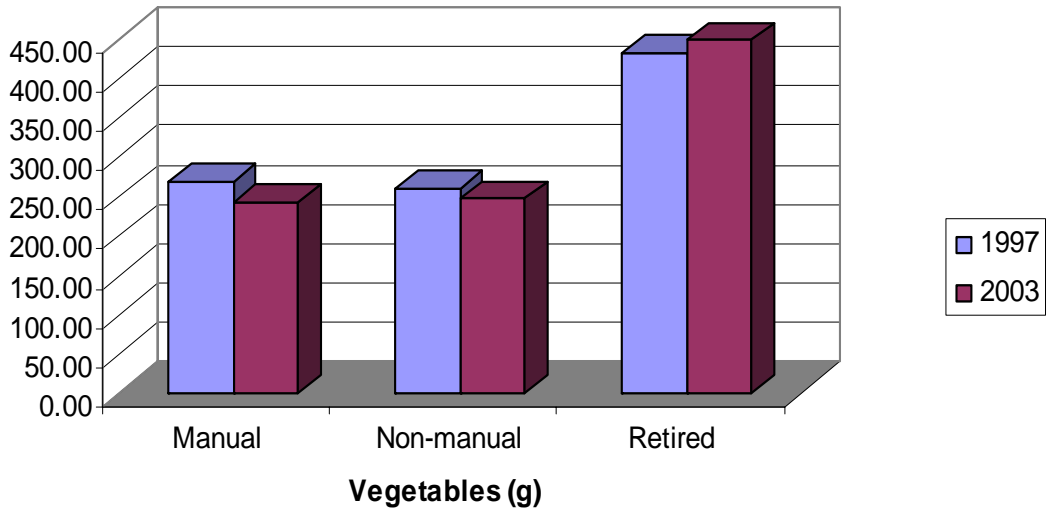


Source: The DAFNE databank

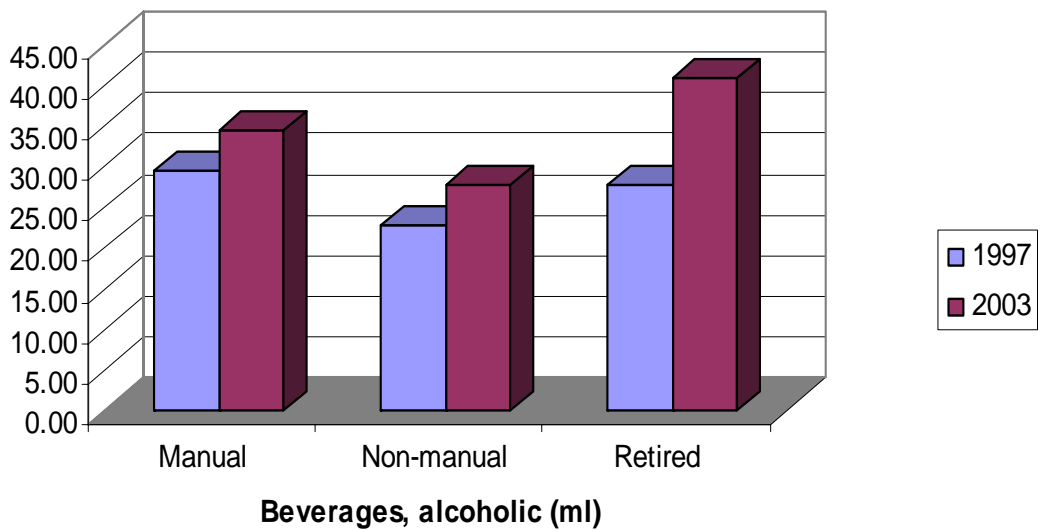
ANNEX I: Mean daily availability of selected food groups by year and occupation and education of the household head.



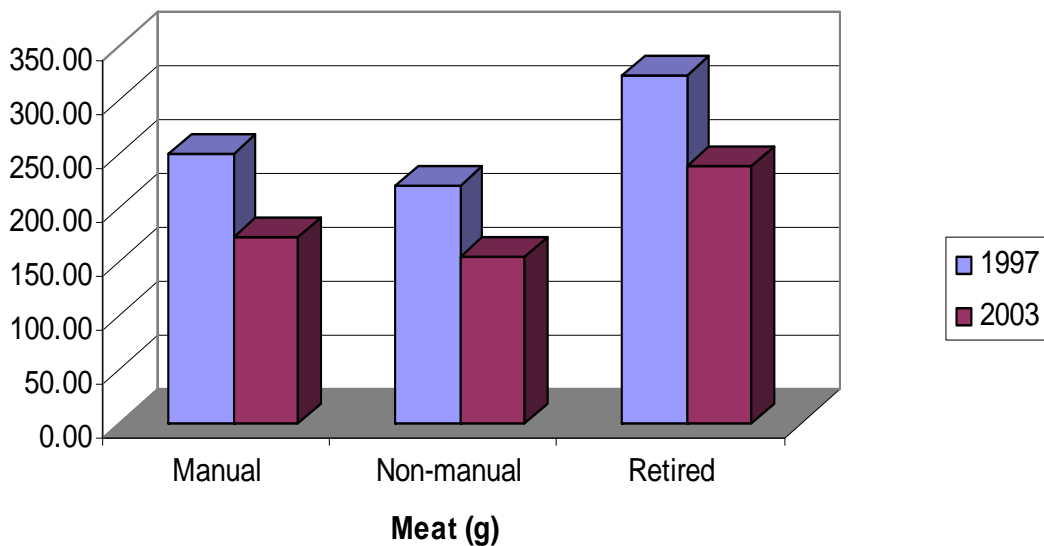
Mean availability of vegetables by year and occupation of household head (quantity/ day/ person)



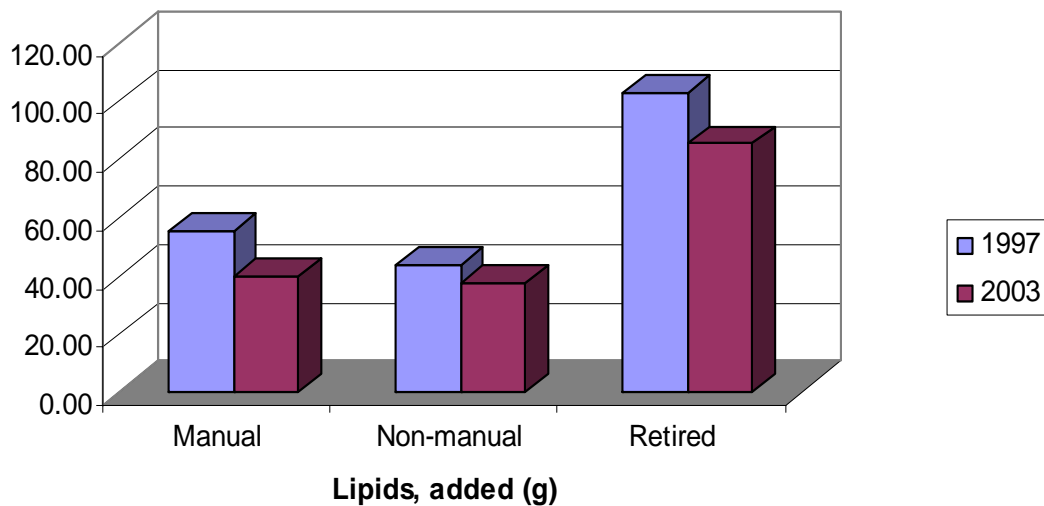
Mean availability of alcoholic beverages by year and occupation of household head (quantity/ day/ person)



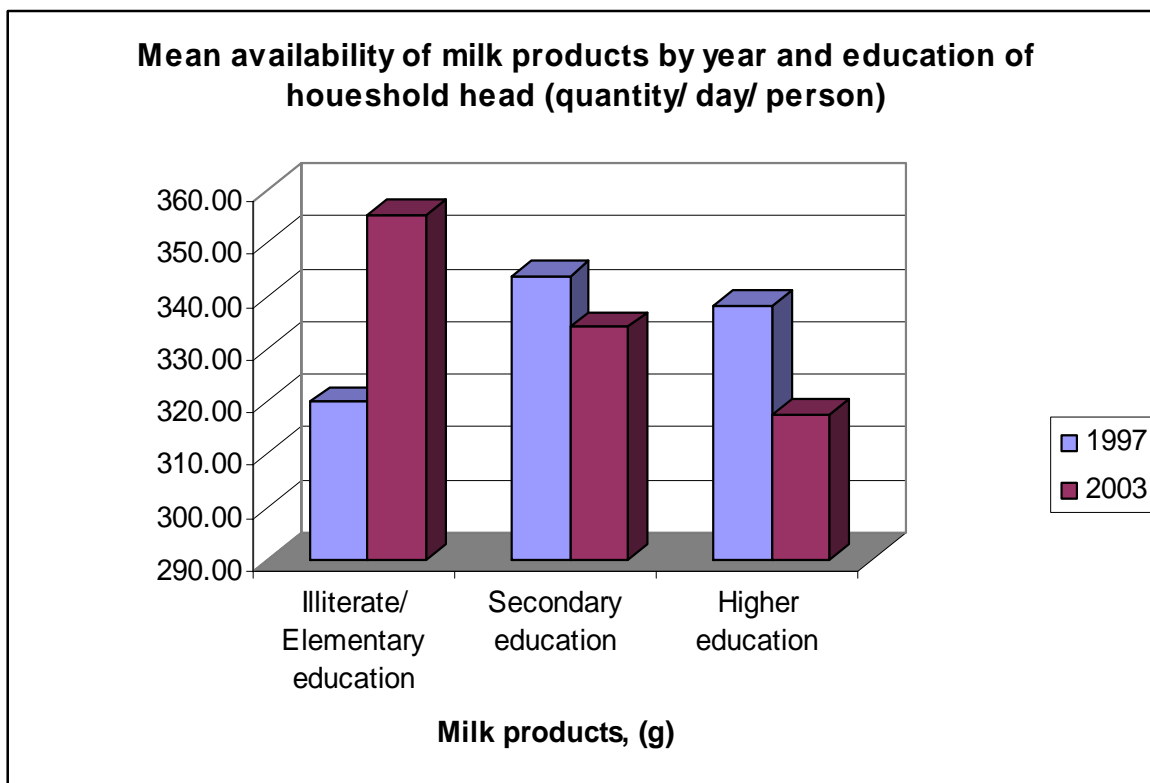
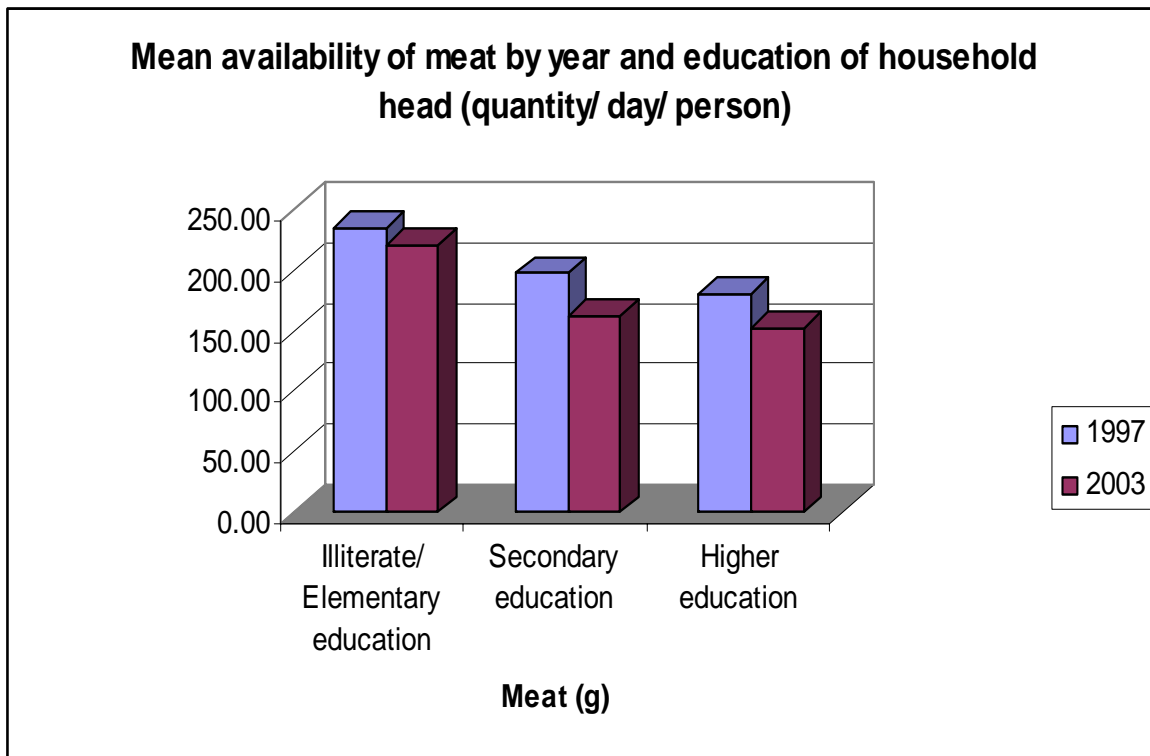
Mean availability of meat by year and occupation of household head (quantity/ day/ person)



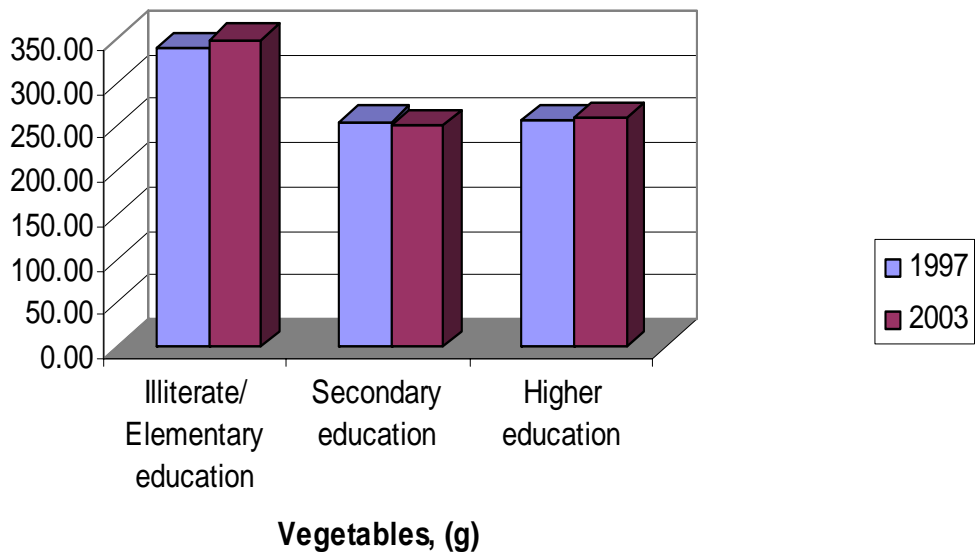
Mean availability of added lipids by year and occupation of household head (quantity/ day/ person)



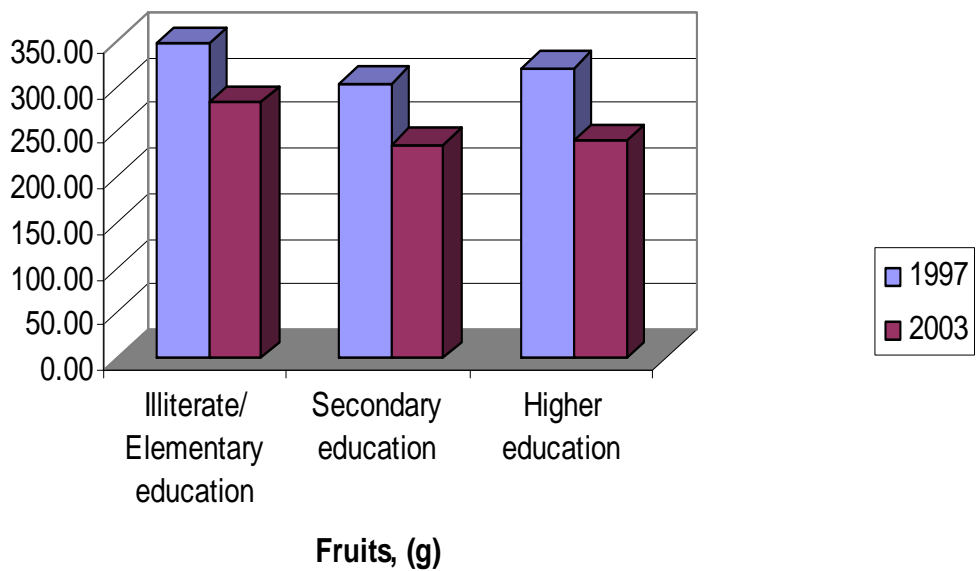
2. Graphs by year over educational status



Mean availability of vegetables by year and education of household head (quantity/ day/ person)



Mean availability of fruit by year and education of household head (quantity/ day/ peson)



Acknowledgement

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Notification

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