Materials, Methods and Data Analysis of Diabetes Registers

The Diabetes Register of Cyprus

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Ministry of Health
Special BIRO Academy Meeting
"Coordinated Information Delivery from Diabetes Registers
to improve quality and outcomes in Europe"
Rome 4-5th June 2010

Directorate-General for
Health & Consumers

Executive
Agency for
Health and
Consumers

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Reference Population

BIRO SOURCE : ■ Larnaca Diabetes Clinic

SOURCES : ■ Ammochostos Hospital

Rural Health Centres : ■ Ormidia

■ Larnaca

■ Kofinou

Country: Cyprus

Region: Larnaca, Ammochostos (Free) Districts

Total Population: 177,600

Diabetes Prevalence: 10.3%

Type of Data Sources: Patients files

N.Participating Centres: 5

Data Source Profile: BIRO Dataset

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Reference Diabetes Data

Year: **2008**

Region: Larnaca, Ammochostos (Free) Districts

Total N. Subjects: 423

Total N.Episodes: 506

- T1: 37 (8.7%)
- T2: 386 (91.3%)

BIRO SOURCE:

N subjects:
T1: 31 (83.8%)
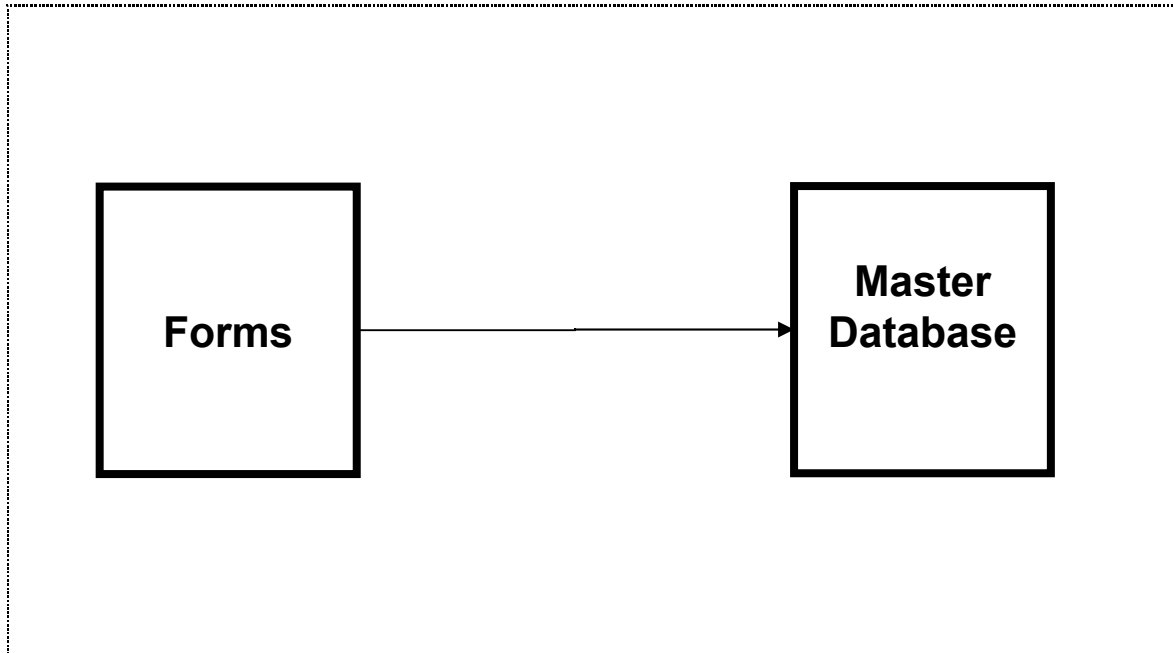T2: 170 (44%)

SOURCES:
Rural Health Centres:
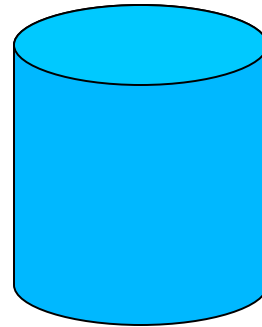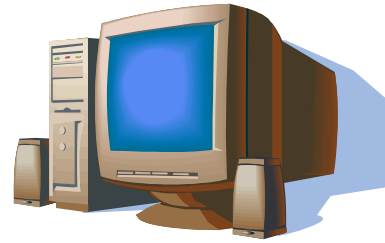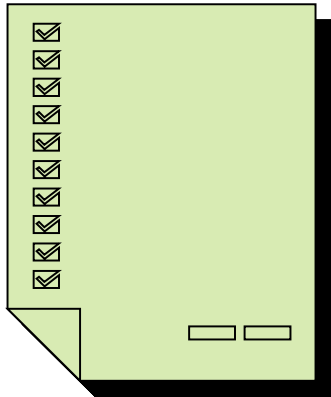N subjects:
T1: 6 (16.2%)
T2: 216 (56%)

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Local Database Structure


```
┌──────────┐                    ┌──────────┐
│          │                    │  Master  │
│  Forms   │ ─────────────────► │ Database │
│          │                    │          │
└──────────┘                    └──────────┘
```
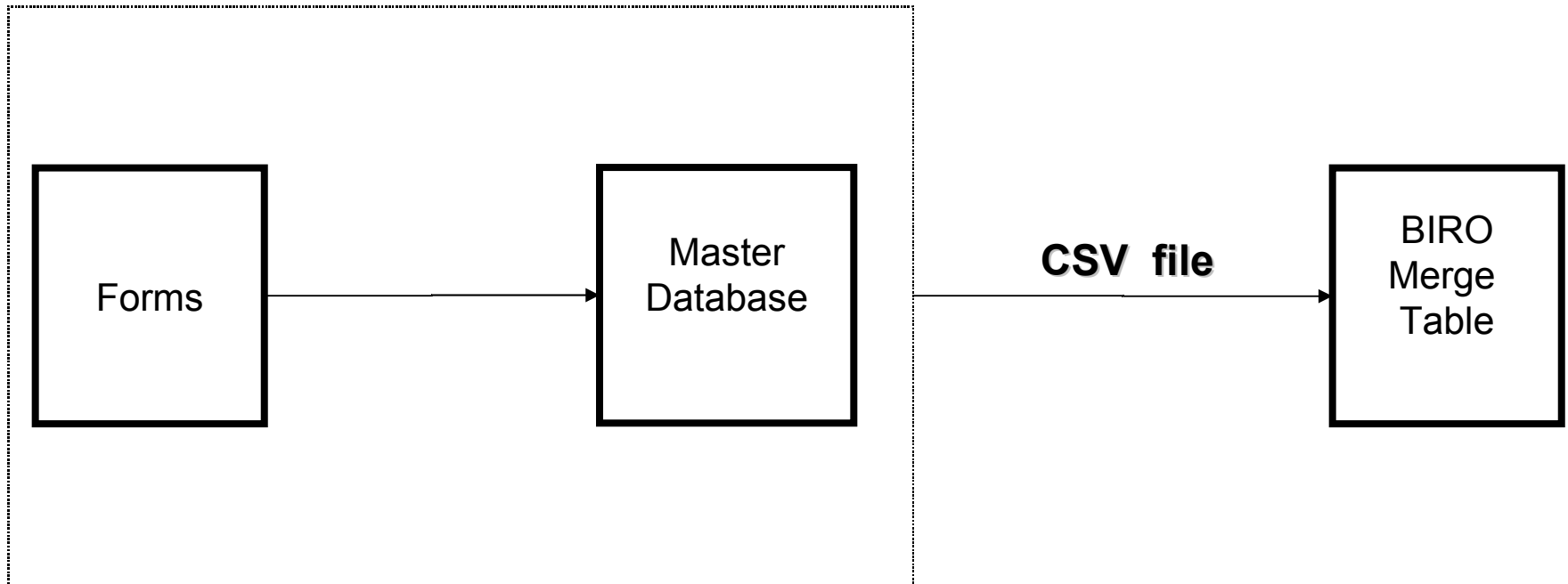
1 PC at the Diabetes Centre (Larnaca New Hospital)

Database based on Microsoft Access 2007.

Privacy and security aspects: The office, where the PC is located, is locked and only the members of the EU.B.I.R.O.D. project have access. The user logs in the PC and database using a username and password. The user does not have access to the design of the database. Private data is not published or transmitted to in any format.

Forms → Master Database → **CSV file** → BIRO Merge Table

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Using BIRO

- Problem: bugs in the system
- Strength: user-friendly

- Strength: The uniformity of data collection ensures accurate uniformed results.
  e.g. Waist circ. Measurements

- Strength: the BIRO European Standard was the base of the creation of our database.

atient ID

ata Source ID

ype Of Diabetes

ex

ate of Birth

ate of Diagnosis

pisode Date

moking Status

igarettes per day

lcohol Intake

eight

eight

aser

ypertension

lindness

mputation

ntihypertensive Medication

ypoglycemic Drug Therapy

ral Drug Therapy

ump Therapy

•Triglyceride
•Eye Exami
•Retinopath
•Maculopath
•Foot Exam
•Foot Pulses
•Foot Sensa
•Nasal Ther
•Average In
•Self Monito
•Diabetes S
•Lipid Lowe
•Anti-platel
•Patient Enr
•End Stage
•Renal Dialy
•Renal Tran
•Stroke
•Active Foot
•Myocardial

Activity Table:

Data will be recorded for the 2nd half of 2009 and 2010.

Population Table:

Year: 2008

There is a rather natural tendency for the mortality of the people – the highest numbers being at the age group of 85+ for males and females.

Diabetes Population Table:

Year: 2008

The numbers of Type 1 diabetes tend to be low for all the age groups.

The numbers of Type 2 diabetes tend to be high for the age group of 50-84.

Left window — C:/Program Files/BIRO/software/workingDirectory/_de_/dataIm...

Merge Table Quality Log FileTotal number of missing values: 11208 (34.446%)

Total number of not parsable values: 0 (0.000%)

Total number of out of range values: 538 (1.653%)

Total number of non admissible values: 0 (0.000%)

Total number of duplicates: 0 (84.326%)

Distribution of missing values:
alc_stat: 485 (76.02%)
alcohol: 249 (39.03%)
amput: 134 (21.00%)
antiplatelet_therapy: 638 (100.00%)

Extracts from the
Data Quality Check log file

Right window — C:/Program Files/BIRO/software/workingDirectory/_de_/dataIm...

List of not admissible values:

List of duplicate records:

List of overlapping cells:
Population Table Quality Log File
Total number of missing values: 117 (8.333%)

Total number of not parsable values: 0 (0.000%)

Total number of out of range values: 0 (0.000%)

Total number of non admissible values: 0 (0.000%)

Distribution of missing values:
pop_ageband: 117 (50.00%)

Distribution of not parsable values:

Distribution of out of range values:

List of not parsable values:

List of out of range values:

List of not admissible values:

Statistical Report: General Characteristics (Tables)

Duration of diabetes	Type 1					
	with hba1c		without hba1c			
	Male (%)	Female (%)	Male (%)	Female (%)		
0 - 9	1 (9.09)	3 (25)	1 (50)	0 (0)		5
10 - 19	7 (63.64)	5 (41.67)	1 (50)	0 (0)		13
20 +	2 (18.18)	4 (33.33)	0 (0)	1 (100)		7
missing	1 (9.09)	0 (0)	0 (0)	0 (0)		1
	11 (42.31)	12 (46.15)	2 (7.69)	1 (3.85)		26

Duration of diabetes	Type 2					
	with hba1c		without hba1c			
	Male (%)	Female (%)	Male (%)	Female (%)		
0 - 9	35 (37.63)	24 (42.11)	7 (33.33)	11 (35.48)		77
10 - 19	32 (34.41)	21 (36.84)	6 (28.57)	14 (45.16)		73
20 +	26 (27.96)	12 (21.05)	8 (38.1)	6 (19.35)		52
missing	0 (0)	0 (0)	0 (0)	0 (0)		0
	93 (46.04)	57 (28.22)	21 (10.4)	31 (15.35)		202

Duration of diabetes (by Gender,Hba1c,Type of Diabetes)

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Statistical Report: General Characteristics (Figures)
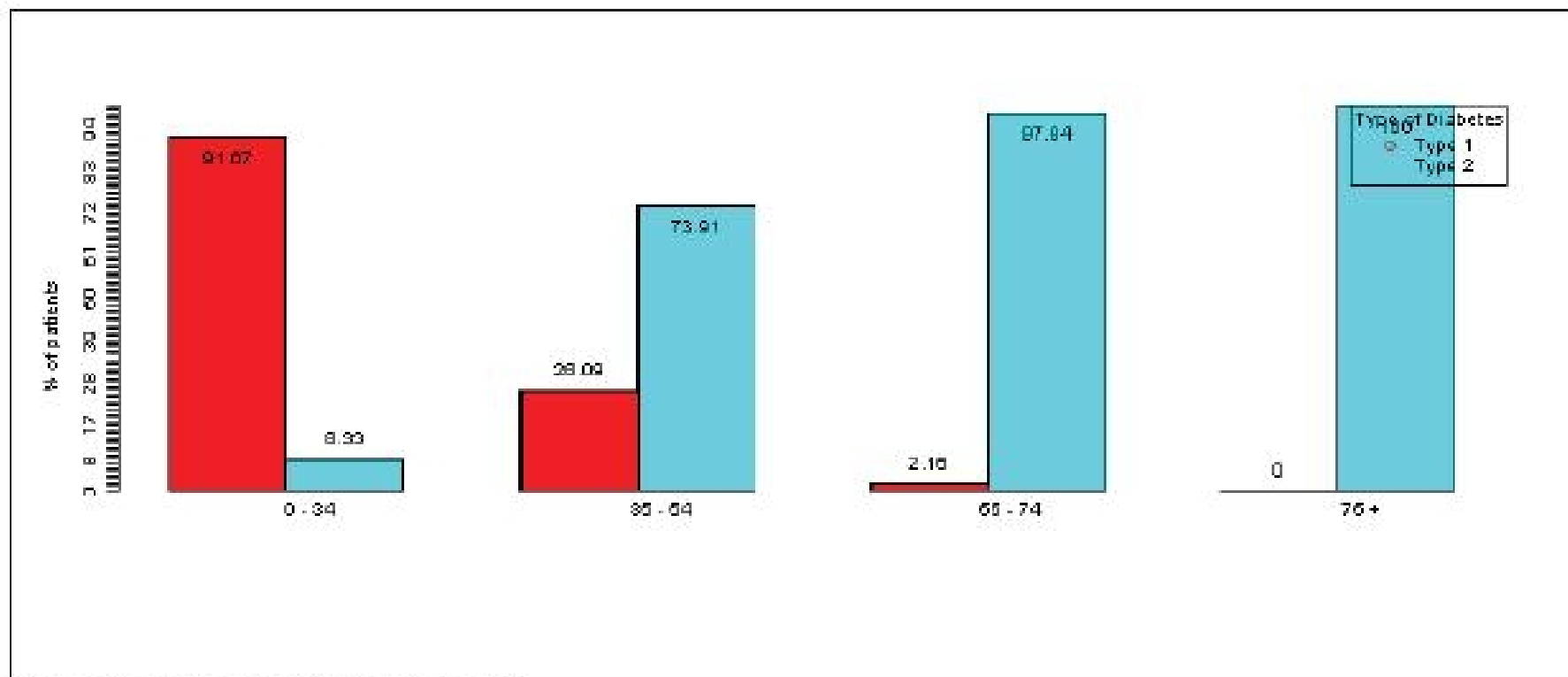
Barplot: Type of Diabetes (by Age)

Statistical Results: BIRO Indicators (Tables)

Weight	Type 2								
	0 - 34		35 - 54		55 - 74		75 +		
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	
0 - 49	0 (0)	0 (0)	0 (0)	1 (5.88)	0 (0)	0 (0)	0 (0)	1 (7.69)	2
50 - 69	1 (100)	0 (0)	1 (5.88)	1 (5.88)	15 (19.23)	14 (24.14)	9 (50)	5 (38.46)	46
70 - 89	0 (0)	0 (0)	8 (47.06)	4 (23.53)	36 (46.15)	31 (53.45)	8 (44.44)	4 (30.77)	91
90 - 109	0 (0)	0 (0)	7 (41.18)	8 (47.06)	22 (28.21)	10 (17.24)	1 (5.56)	2 (15.38)	50
110 - 129	0 (0)	0 (0)	0 (0)	3 (17.65)	4 (5.13)	0 (0)	0 (0)	1 (7.69)	8
130 +	0 (0)	0 (0)	1 (5.88)	0 (0)	0 (0)	1 (1.72)	0 (0)	0 (0)	2
missing	0 (0)	0 (0)	0 (0)	0 (0)	1 (1.28)	2 (3.45)	0 (0)	0 (0)	3
	1 (0.5)	0 (0)	17 (8.42)	17 (8.42)	78 (38.61)	58 (28.71)	18 (8.91)	13 (6.44)	202

Weight (by Gender,Age,Type of Diabetes)

BMI	Type 2								
	0 - 34		35 - 54		55 - 74		75 +		
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	
0 - 24	0 (0)	0 (0)	1 (5.88)	2 (11.76)	12 (15.38)	0 (0)	4 (22.22)	1 (7.69)	20
25 - 26	1 (100)	0 (0)	3 (17.65)	0 (0)	8 (10.26)	7 (12.07)	4 (22.22)	1 (7.69)	24
27 - 29	0 (0)	0 (0)	3 (17.65)	2 (11.76)	24 (30.77)	10 (17.24)	4 (22.22)	2 (15.38)	45
30 - 39	0 (0)	0 (0)	9 (52.94)	7 (41.18)	31 (39.74)	33 (56.9)	6 (33.33)	6 (46.15)	92
40 +	0 (0)	0 (0)	1 (5.88)	6 (35.29)	1 (1.28)	6 (10.34)	0 (0)	2 (15.38)	16
missing	0 (0)	0 (0)	0 (0)	0 (0)	2 (2.56)	2 (3.45)	0 (0)	1 (7.69)	5
	1 (0.5)	0 (0)	17 (8.42)	17 (8.42)	78 (38.61)	58 (28.71)	18 (8.91)	13 (6.44)	202

BMI (by Gender,Age,Type of Diabetes)

| Smoking status	Type 2								
	0 - 34		35 - 54		55 - 74		75 +		
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	
Current smoker	0 (0)	0 (0)	8 (47.06)	3 (17.65)	22 (28.21)	2 (3.45)	2 (11.11)	0 (0)	37
Non-Smoker	1 (100)	0 (0)	4 (23.53)	14 (82.35)	15 (19.23)	50 (86.21)	6 (33.33)	12 (92.31)	102
Ex-Smoker	0 (0)	0 (0)	5 (29.41)	0 (0)	41 (52.56)	6 (10.34)	10 (55.56)	1 (7.69)	63
	1 (0.5)	0 (0)	17 (8.42)	17 (8.42)	78 (38.61)	58 (28.71)	18 (8.91)	13 (6.44)	202

Smoking status (by Gender,Age,Type of Diabetes)

Statistical Report: BIRO Indicators (Figures)
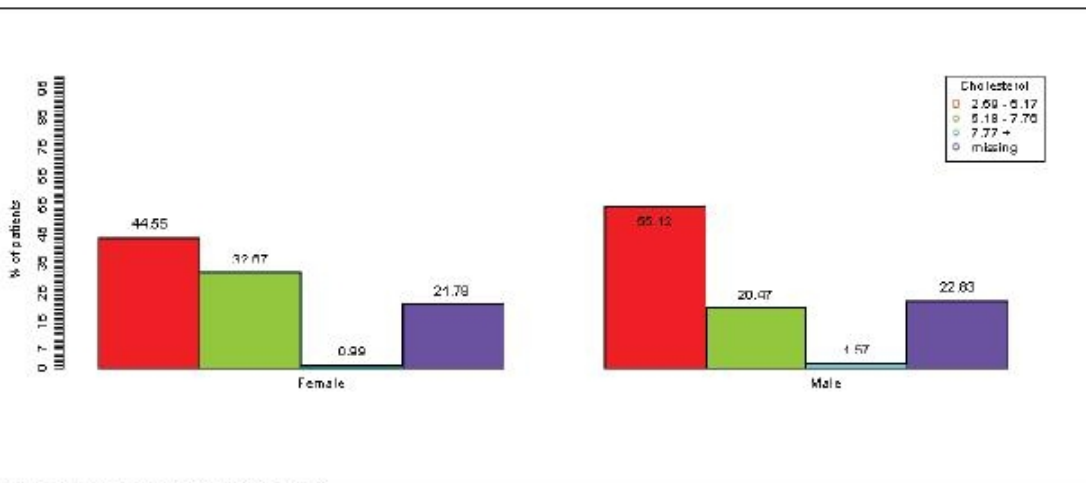
Barplot: Cholesterol (by Gender)
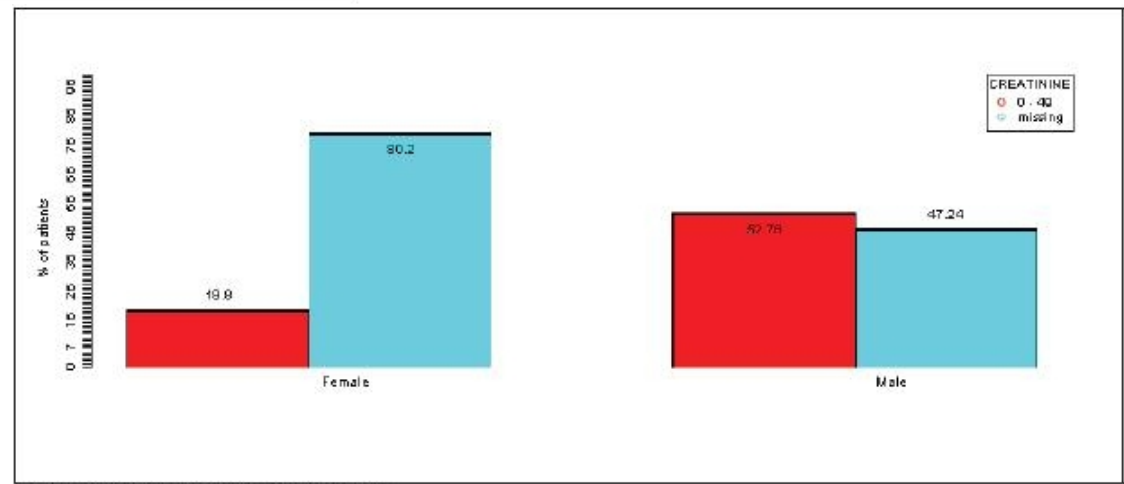
Barplot: CREATININE (by Gender)

- We now have a common framework for looking after people with diabetes

- The Cyprus Diabetes Register has started as a result of the BIRO data collection

- Now, the care and data collection is uniformed for those taking part. This is also the hoped for end result when BIRO is adopted in all centres on the island.

- Data collection–to be recorded electronically

- The level of the data quality is satisfactory.

- Better HbA1c due to teaching of self monitoring

- Patients' better understanding of their diabetes

- Consistent yearly reviews

- We faced a few problems when we started using the BIRO system (bugs of the system, incompatible data etc) but this is normal when you deal with computer systems. As it was evolving, the problems became less and less in number. Now, the BIRO system has reached a satisfactory level and it is a useful and easy-to-use tool.

- The programme to be rolled out at all the health centres of the island

  Intention: By 2013

  Now…..???(economic crisis)

 Other fields of data collection:

- Family History (For T2D starting prevention for family).

- Exercise (yes, no, satisfactory)

- Self monitoring

-

- -Post prandial sugars

- -Visit to Dietician

- -Flue Vaccination

- - Microalbumin (recorded as mg/l)

- Diabetic Neuropathy (differentiate)

- CVD (Recording specifics: e.g. CABG, Angioplasty, Angina, Heart Failure)

- Other medications

- Recording of family history of T2D will enable the introduction of prevention programmes for the off springs of these families.

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THANK YOU!!!