

## Health care services to diabetics in the territory of the Lha Napoli 2: quality perceived

Antonino Parlato<sup>1</sup>, Paolo Russo<sup>1</sup>, Daniela Ugliano<sup>2</sup>, Aniello Visciano<sup>2</sup>, Giorgio Liguori<sup>2</sup>

<sup>1</sup>Epidemiology and Prevention Departmental Area (ADEP), ASL Naples 2, Naples, Italy; <sup>2</sup>Chair of Hygiene and Epidemiology, University of the Studies of Naples "Parthenope", Naples, Italy

Correspondence to: Giorgio Liguori, Chair of Hygiene and Epidemiology, Department of Institutions and Territorial Systems, University of Naples "Parthenope", Via Medina 40, 80133 Naples, Italy, E-mail: giorgio.liguori@uniparthenope.it

### Abstract

**Background:** Worldwide, diabetes mellitus is a chronic disease which now appears to be substantially increasing especially in industrialized countries. In recent years important improvements have been achieved in the treatment of the disease and the prevention of complications, but adherence of health care workers to these indicators varies considerably and often the results are inadequate. Our study relates to health care services supplied to diabetics within the territory of LHA (Local Health Agency) Napoli 2 in Italian region of Campania. The results obtained from 3 district areas were then compared.

**Methods:** The prevalence study was carried out by interviewing diabetes-affected patients (aged 18-64) in the territory examined. For each area, a representative number of patients was selected through simple casual sampling.

**Results:** A minimal knowledge of risk factors associated with diabetes in respect to those registered at a national level, an incomplete adherence to recommended actions, a good perception of the quality of healthcare services and a good level of information were recorded from all of the 462 subjects interviewed.

**Conclusions:** This study draws attention to the critical aspects in healthcare services supplied to diabetics. The data collected could be useful to more effective and efficient strategies of "disease management" resulting in the better allocation of resources.

### Introduction

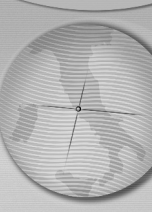
The worldwide spread of the chronic disease diabetes mellitus, appears to be nowadays in substantial increase, especially in industrialized countries, because of enhanced wealth, the changes in life styles and the progressive ageing of the population. Such increases concerns mainly type 2 diabetes (85-95% of cases), and to a lesser extent type 1 diabetes [1-3].

In Italy, the current estimated prevalence of diabetes is 4.5% of the entire population and above 12% of those aged over 65; in Campania it is recorded to be 4.4% [4-7].

The pathology of the disease is of particular relevance especially considering the numerous micro and macro-vascular complications diabetics have to deal with. Among the first, retinopathy represents the major cause of blindness among adults along with nephropathy which is the major cause of chronic kidney failure and dialysis: in terms of macroangiopathic complications, cardiovascular events are responsible for 80% of the deaths [8, 9].

Diabetic disease has a very high social cost. We estimate that in 1998 it had absorbed 6.7% (5.800 million euros) of the entire national health expenditure, public and private, and that over 75% of such resources had been used for hospital treatment of the complications. It is stated that if the cost of the diabetic patient without complications is 1 then it rises to 2.6 in the presence of macro-vascular complications, to 3.5 for micro-vascular sequelae and up to 4.7 in presence of both. To these costs we must add those of the drugs and those linked to work inability and the worsening of their quality of life, which increases in turn with the complications [10-12].

In recent years important improvements have been achieved for the treatment of the disease and the prevention of complications. In terms of the latter, the most effective interventions are listed in various guidelines under the form of advisories for clinical behaviour edited jointly by the Italian associations of diabetology and general medicine (Associazione Medici Diabetologi - AMD; Società



Italiana di Diabetologia - SID; Società Italiana di Medicina Generale - SIMG) and integrated with others produced by influential sources and/or based on scientific evidence [13-15].

Systematic control of glycaemia, for example, has been proved to be useful to reduce the risk of micro-vascular problems by up to 30% in type 2 diabetes and by up to 70% in type 1 diabetes, as well as the risk of all the other complications [10]. Additional indicators have been suggested, such as, for example, the frequency in monitoring the concentration of glycosylated haemoglobin (glycate) and lipids, or the measuring of intraocular pressure and examinations of the eye-ground and feet, prescription of aspirin, evaluation of the presence of nephropathy, advice on physical activity and the cessation of cigarette smoking [16,17]. Nevertheless, adherence of health care workers to such indications varies considerably and often the results are inadequate. In Italy, up to now, various studies have been completed on the quality of the assistance provided to a diabetic subject. Research conducted a few years ago in Italy points out that, in the course of a year, not more than 15-50% of the patients had had the test for the glycosylated haemoglobin performed and only 72% had undergone an exam of the eye-ground [18]. The greater part of the studies completed so far is however limited to a collection of information concerning patient Diabetes Centres (DC) and/or the out-patients' departments of the Family Physicians (FP) or limited geographical areas. Most of the time, information has been obtained in order to investigate service efficiency and only in a few cases has the real impact of information and advice received been evaluated, on the patient [5,11-12].

The present study, was carried out by the Department Area of Epidemiology and Prevention (further as ADEP) of the Local Health Agency Napoli 2 (further as LHA NA2) and the Chair of Hygiene and Epidemiology at the University "Parthenope" in order to investigate the modalities of the assistance supplied in the LHA NA2 territory and the quality perceived by a sample of the population, considering the user's point of view. In particular, we have compared the results obtained, through interview, in 3 district areas of the territory referred to above, in order to highlight potential differences and, in their light, identify the typology and modalities of interventions able to remove disparities and assure equity and efficiency of their performances.

In particular, the aims of the study were:

- to detect the possible biological and behavioural risk factors which form the basis of diabetes complications and correlates them to the potential lack of management;
- to analyze the level of knowledge of the patients about their disease and its control, above all the behaviour and therapeutic measures to be carried out;
- to evaluate the level of perception of the quality of the assistance supplied and the knowledge about their own rights;
- to verify the adherence of clinical and lab practices to the guidelines used in our country;
- to compare at a local, regional and national level the models of assistance and the quality of the activities undertaken.

### Material and Methods

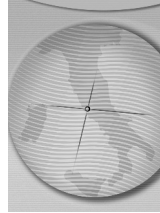
The ADEP of LHA NA2 is organized in three Simple Operative Units of Epidemiology (UOSE) competent, respectively, for Pozzuoli and the neighbouring municipalities (Bacoli, Monte di Procida, Quarto), Giugliano and the neighbouring municipalities (Calvizzano, Marano, Melito, Mugnano, Qualiano, Villaricca), as well as the islands of Ischia and Procida. These territories are relatively homogeneous in their social-economic features (data not shown) and the organization of health services (Table 1).

We have conducted research primarily among those subjects with diabetes aged between 18-64 (born between 1.1.1939 and 1.1.1986), identified from the lists of residents in the territory referred to above with ticket exemption for diabetic pathology.

In every one of the three multidistrict areas, a representative number of patients has been interviewed, enlisted in proportion of the "specific weight" of the population resident in the single municipality, compared to the total of residents in the territory of the LHA NA2. Recruitment has been carried out by means of simple casual sampling.

We used a modified version of the questionnaire used in 2004 by ISS for the QUADRI study ([www.epicentro.iss.it/quadri/](http://www.epicentro.iss.it/quadri/)) [5] for the interviews.

The questionnaire, which is divided into seven sections, contains 62 questions concerning length, age of onset of the disease and information about the structure supplying the assistance; periodical controls performed and drugs taken; presence of potential associated risk factors; knowledge of the patient's rights; complications; perceived quality of the assistance supplied; level of education, work activity and anthropometric data. Special



attention was given to the section concerning “coordination” and “over-all service”, meaning in the first case “the take in care of the patient at the DC and the planning of the performances supplied”, and in the second case the same coordination together with the “lodging” aspect (welcome and comfort).

Conveniently trained workers contacted the subjects, who had already been informed by a letter, by phone; a copy of this was also sent to the care provider. Moreover, the interviews were performed, for those who requested it, at the UOSE centres.

All the information collected has been inserted into an excel sheet and elaborated as percentage data; for every single answer, the percentage value registered for an area has been compared with the other two of the ASL territory and with analogous data concerning regional and national contexts. For the scope, we have used the data recorded in the publication on the Studio QUADRI - Regione Campania, on behalf of the Health Aldermanry, November 2005.

particular differences neither among the three ASL areas, nor within the regional and national averages (non charted data).

The level of education also appears homogeneous and superposable to the Campanian and national ones, with the exception of a greater number of high school/university graduates in Pozzuoli (31%); the percentage of employed compared to Campania (39%) and Italy (43%), is lower in two of the three multidistrict areas, especially among the islanders (22%) (Table 2).

In the area of Giugliano, diabetics suffering from hypertension (36%), hypercholesterolemia (37%) and over-weight (32%) are lower in number compared to the other citizens of the LHA NA2 and the Campania Region (respectively, 54%, 49% and 36%). In Pozzuoli, instead, the obesity data (19%) results are noticeable lower than those of regional and national levels (32% for both), as well as the values registered in Giugliano (37%) and in the islands (72%). In the latter, the cumulative percentage of overweight-obese subjects is 62.5%, almost double compared to the values of the other two territorial contexts (34,5%).

Table 1. Territorial context of the study

UOSE	Neighbouring Municipalities	Area (Km <sup>2</sup> )	Population Density*	Citizens	Patients	DC	Specialists	FP	Ratio** PT/FP
Pozzuoli	Bacoli, Monte di Procida, Quarto	74,32	2.179,21	161.959	143	2	3	101	1.363
Giugliano	Calvizzano, Marano, Melito, Mugnano, Qualiano, Villaricca,	136,65	2.226,61	304.267	259	2	5	294	849
Islands	Ischia, Procida	50,47	1.410,5	71.188	60	1	2	46	1.284
TOTAL	13	261,44	1.938,77	537.414	462	5	10	441	1.165

UOSE: Simple Operative Unit of Epidemiology; FP: Family Physicians; PT: overall patients; DC: Diabetes Centres

\*number of subjects/km<sup>2</sup>; \*\*number of patients/family physician

## Results

Among the 462 subjects that have been interviewed, males/females ratio was 1.2 (Italy 1.3) and average age was 42 (range 18-64). Different distributions of age and sex in interviewed samples from different areas were not registered.

Information about their age at the onset and the length of the disease has not pointed out

Almost half of the diabetics in Ischia and Procida (islands 47%) declare not to have associated risk factors. In relation to this, in the other two LHA NA2 areas the number of the diabetics without risk factors (Giugliano 35%; Pozzuoli 38%) appears higher than the rest of the regional territory (21%) and Italy (24%) (Table 3).

In all of the territory under consideration, the prevalence of the complications is higher than the

**Table 2. Level of education and employment of interviewed subjects**

LEVEL OF EDUCATION / EMPLOYMENT	Giugliano	Pozzuoli	Islands	Campania	Italy
LOW (up to the elementary classes)	38%	36%	42%	43%	41%
MEDIUM (lower medium classes)	39%	33%	34%	29%	31%
HIGH SCHOOL OR ACADEMIC DEGREE	23%	31%	22%	8%	28%
OCCUPATION	43%	34%	22%	39%	43%

Source of regional and national data: Studio QUADRI – Campania, on behalf of the Health Aldermanny; november 2005.

**Table 3. Associated risk factors**

FACTORS	Giugliano	Pozzuoli	Islands	Campania	Italy
HYPERTENSION	36%	56%	47%	54%	n.a.
HYPERCHOLESTEROLEMY	37%	73%	87%	49%	44%
OVERWEIGHT	32%	50%	53%	36%	40%
OBESITY	37%	19%	72%	32%	32%
OVERWEIGHT + OBESITY	34.5%	34.5%	62.5%	34.0%	36.0%
ABSENT	35%	38%	47%	21%	24%

Source of regional and national data: Studio QUADRI – Campania, on behalf of the Health Aldermanny; november 2005.

**Table 4. More frequent complications**

	Giugliano	Pozzuoli	Islands	Campania	Italy
OCULAR DISEASE	26%	22%	23%	18%	19%
HEART ISCHEMIC DISEASE	18%	13%	15%	10%	13%
NEPHROPATHIES	13%	9%	10%	3%	n.a.
AMPUTATION	7%	2%	1%	n.a.	n.a.
ICTUS	6%	5%	5%	4%	n.a.
AT LEAST ONE COMPLICATION °	70%	51%	57%	35%	32%

° infarct or angina; ictus or cerebral thrombosis; finger, foot or leg amputation; renal disease or ocular pathologies associated to diabetes. Source of regional and national data: Studio QUADRI – Campania, on behalf of the Health Aldermanny; november 2005

**Table 5. Therapy**

	Giugliano	Pozzuoli	Islands	Campania	Italy
ORAL HYPOGLYCEMIANTS	60%	61%	41%	45%	68%
INSULIN*	26%	27%	41%	35%	13%
DIET	18%	10%	18%	20%	n.a.

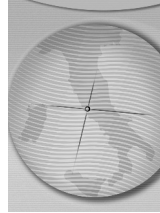
\* on its own or in association with oral hypoglycemiants. n.a. = data not available. Source of regional and national data: Studio QUADRI – Campania, on behalf of the Health Aldermanny; november 2005.

regional and national averages. In particular, subjects with at least one complication (infarct or angina, ictus or cerebral thrombosis, finger, foot or leg amputation, renal disease correlated to diabetes, ocular pathologies caused by diabetes) account for 70% of the diabetics from Giugliano, 51% of those from Pozzuoli and 57% of the islanders (Campania 35%; Italy 32%). The most frequent complications are ophthalmological (Table 4).

In Table 5 the results concerning therapeutic

regimens is reported. Treatment with oral hypoglycemiants appears to be the most common form of treatment everywhere, except for in the islands where it is equal to insulin therapy (41%). Controlled diet is performed by a small percentage of patients (in Pozzuoli only 10%), while conversion to insulin, by itself or in association with drugs per OS, appears to be variable.

Periodicity of suggested controls, in adherence with the guide lines, appears non-homogeneous



across all of the examined territory. For example, in relation to annual controls, cholesterolemia is the most investigated parameter, while those carried out less frequently are accurate examinations of the feet (29% for the patients from Giugliano) and the eye-ground (35% for the islanders).

In Giugliano, diabetic subjects who undergo at least one annual control are 54.5%, a lower percentage than that reported elsewhere: islands 65.75%, Pozzuoli 64%, Campania 63% and Italy 61.75%.

38% of the residents in Pozzuoli, 57% in Giugliano and 59% in Ischia and Procida declares to have been thoroughly investigated, at a DC, at least once in the last six months (examination of the heart and of the condition of the lower limbs); among those who turn to a FP, such values are, respectively for

controls appears always to be well beneath the suggested standard, which states that all those being assisted with diabetes should have a thorough visit every six months.

In relation to four-monthly controls, patients from Ischia and Procida undergo controls for arterial pressure (94%), however these levels are not repeated for determining glycosylated hemoglobin (12%); measurement of fasting glycemia is performed by LHA NA2 patients (average 62.3%) with a higher frequency than what is reported in Campania (49%) and the rest of the Country (54%).

Home glycaemic self-control, performed at least daily, appears to be the test to which all insulin dependent patients comply with; with 57% of the patients from the islands undertaking this form of control more than once a day (Table 6).

Table 6. Periodicity of the controls coherently with the guidelines

PERIODICITY OF THE CONTROLS		Giugliano	Pozzuoli	Islands	Campania	Italy
<b>ANNUAL</b>						
Accurate control of the feet		29%	41%	71%	40%	37%
Exam of the eye fund		62%	70%	35%	62%	59%
Urinary albumin		50%	58%	65%	66%	68%
Cholesterolemia		77%	87%	88%	84%	83%
<b>SIX-MONTHLY</b>						
Exhaustive medical visit	by the DC*	57%	38%	59%	44%	31%
	by the FP§	32%	42%	82%	42%	31%
<b>FOUR-MONTHLY</b>						
Control of the arterial pressure		76%	86%	94%	80%	75%
Determination of the glycosylated hemoglobin		36%	40%	12%	70%	66%
Measurement of glycemia at fast		64%	64%	59%	49%	54%
<b>DAILY</b>						
Home glycaemic self-control for those who are under insulin treatment	daily	100%	100%	100%	100%	62%
	more times a day	45%	16%	57%	54%	n.a.

n.a. = not available. \*DC: diabetes centre. §FP: family physicians

Source of regional and national data: Studio QUADRI – Campania, on behalf of the Health Aldermanry; november 2005.

the 3 areas, equal to 42%, 32% and 82%.

Diabetics from Giugliano prefer to apply to specialist centres (57% vs 32%). In Pozzuoli, in spite of the small difference (42% vs 38%), it's the family physician, instead, who has a higher number under control. In the islands, finally, about 20% of the patients visit both the national health centre and the family doctor.

Furthermore, data concerning six-monthly

Diabetics from Giugliano report to have received information about health promoting behaviours to avoid the worsening of their condition less frequently (66.75%) than those from the other corporate areas (Pozzuoli 73.5%; islands 78.% and Campania 78.2%); with regards to the "accurate control of the feet", Pozzuoli is an area in which this information seems to be lacking. The importance of diet and of physical

Table 7. Received information

	Giugliano	Pozzuoli	Islands	Campania	Italy
CONTROL OF THE FEET	48%	25%	65%	54%	50%
HYPOGLYCEMIA TREATMENT	39%	78%	65%	70%	n.a.
IMPORTANCE OF THE DIET	96%	98%	100%	98%	n.a.
CORRECT PHYSICAL ACTIVITY	84%	93%	82%	92%	86%
TOTAL OF RECEIVED INFORMATION (average)	66.75%	73.5%	78%	78.25%	n.c.
KNOWLEDGE OF DIABETIC'S RIGHTS	69%	100%	88%	95%	94%

Source of regional and national data: Studio QUADRI – Campania, on behalf of the Health Aldermanry; november 2005.

n.a. = not available n.c. = not calculated

exercise is the preventative rules that most of the subjects across all of the areas have knowledge of. In Giugliano only 69% of those interviewed admits to knowing their patient's rights (Table 7).

Those interviewed appear to be satisfied with the interpersonal relationship with the LHA NA2 health care workers, concerning both their kindness and the clearness of the information provided, as well as their willingness to listen: average percentage value for "good judgement" always >90% (except Giugliano) and superposable to the regional and national values.

The judgement with regards to the quality of the out-patients' departments (cleanliness and pleasantness, accessibility, timetables) also appears positive.

Concerning waiting times, instead, LHA NA2

diabetics, except the ones from Ischia and Procida, acknowledge on the average longer times (even over one hour) than the other citizens in Campania and Italy. The islanders, on the other hand, have more difficulty to arrange a new appointment at the DC (70% vs 90% and 91%, respectively in Giugliano and Pozzuoli).

Opinions (average of the 3 territorial contexts 85.3%) concerning the coordination and over-all service (86.7%) appears to be gratifying and higher than those reported in Campania (73% and 66%) and in Italy (84% for both) (Table 8).

### Discussion and Conclusions

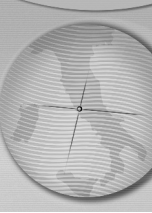
The quality of the assistance as well as the integrated management of diabetic diseases across the territory are considered essential to

Tabella 8. Perceived quality: the patient's point of view

ASSISTANCE SUPPLIED: STRUCTURES, ORGANIZATION AND STAFF		Giugliano	Pozzuoli	Islands	Campania	Italy
Kindness and helpfulness of the staff (excellent or good)		85%	96%	100%	95%	92%
Understandable explanations (always or often)		88%	98%	94%	93%	92%
Careful listening (always or often)		87%	98%	94%	92%	91%
Timetables (excellent or adequate)		75%	95%	100%	89%	n.a.
Accessibility (good)		91%	98%	100%	93%	n.a.
Cleanliness and pleasantness (excellent or good)		87%	86%	100%	92%	n.a.
Waiting time < 30 minutes	DC*	36%	61%	100%	93%	n.a.
	FP§	53%	43%	83%	56%	n.a.
Waiting time > 1 hour	DC*	63%	39%	0	19%	16%
	FP§	47%	57%	0	16%	17%
Appointment for next visit		90%	91%	70%	84%	84%
Coordination (excellent or good) °		81%	87%	88%	73%	66%
Over-all service (excellent or good) °°		81%	91%	88%	84%	84%

\* DC: diabetes centre; § FP: family physicians; ° take in charge and optimizations of assistance performances

°° coordination + lodging aspect (comfort)



effectively prevent complications, improve life quality and regain the citizen-patient work activities [16-18].

The present study has detected that the enrolled subjects globally report, compared with what is highlighted at a regional and national level, a lower incidence of risk factors associated to diabetes; this appears still more evident if we consider the percentage of those who have declared a total absence. However, because the prevalence of complications is higher than what is reported in Campania and Italy, these two results appear to be contradictory.

Since diabetics from Giugliano show to be the least inclined to undertake medical visits and suggested controls, we have to consider that the risk factors, rather than being non-existent, are simply not diagnosed and, after all, evidence on the crucial role that a few of these (dyslipidemia, arterial hypertension, obesity and over-weight) and their treatment play on the course of the disease and its complications are reported to be constantly increasing everywhere [19-20].

Moreover, as observed, diabetics from Giugliano are those who least turn to a FP, repeatedly missing the occasion to receive information, perform guided controls and, finally, taking advantage of their own patient rights. Probably the diabetes centre cannot and is not able to substitute, in an effective manner, the confidential relationship that is a specific prerequisite of family physicians.

The islanders, in spite of their low social-economic level, declare to be among the most informed, and, because of this, they undergo systematic and periodical controls. Almost half of them (47%) report that they do not show risk factors and 90% have knowledge of their own rights; moreover, as described, the number that turns to both the FP and the DC is important. Nonetheless, the islands have the highest number of hypercholesterol and overweight-obese diabetics; from which we might suppose that despite the perception of a precarious health condition and the awareness of correct life styles, confirmed by the continue request of visits, people are not able to change their habits and, above all, those related to insufficient physical activity and smoking.

Adherence to the different suggested controls (four-monthly and/or annual) is always <100%, especially in the island area; only 5% of those interviewed performs the scheduled all the eight most important controls on time, which is necessary for effective prevention of complications. Explanations for such may include

insufficient organization for the assistance to chronic diseases (disease management) or in terms of individuals (case management) an inadequate culture of counselling and health promotion, which is necessary to obtain a patient's active participation in the management of their disease on the part of the patient themselves and, not last, the lack of local evaluations on the quality of the assistance provided.

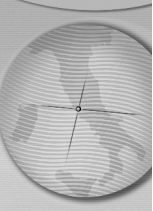
Counselling and individual health promotion must be regularly inserted in the management programs of diabetic citizens. It is also necessary to control the regularity and the accuracy of their behaviour, periodically evaluating their implementation with their own active participation.

Active participation of the patients, in fact, is indispensable in order to achieve good result from the assistance strategies. They must take part in the fulfillment of the therapeutic plan and we must acknowledge them an essential role in the accomplishment of the activities for the prevention of the serious complications arising from the disease, having at their own disposal the information to achieve such purposes [21].

Information must be assured in a prioritised manner where knowledge has appeared to be insufficient, especially about glycate hemoglobin, control of the feet and hypoglycemia management. Communication remodulation in relation to correct life styles appears to be indispensable: despite the common perception (over 90% is informed about the abolishment of smoking, weight control and correct physical activity), customary behaviour demonstrates the scarce effectiveness of the current educational interventions.

The patient's point of view has reached, over the last years, an importance which is always greater and is one of the guiding criteria for the evaluation of the quality of the assistance supplied by the National Health Service. A positive perception of the user about the organizational level of the services, the interpersonal relationship between operators and patient and the comfort of the environment improves, in fact, the relationship doctor-patient and, in last analysis, the quality of the treatment supplied in terms of a higher compliance to medical advices. Positive perception about services, improving participation, determines positive relapses on life quality [13].

As described, patient's perception about LHA NA2 services is altogether good. The good relationship between the citizen and health care



workers and the appreciation for the health service received represent a solid base to build on initiatives to improve the quality of the services aimed at health and empowerment (controls, adequate therapies, education, etc.).

In conclusion, the wish is that this study may contribute to, in the territory studied, highlighting those aspects which can be worked on to improve the patient's quality of life and to assist them in avoiding the most frequent complications. The information collected during this study will be made available to the diabetes centres, the districts and the corporate directorate, in order to support more effective and efficient strategies for "disease management", as well as a better resource allocation.

### References

- 1) Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. *Diab Care* 2000;23(Suppl. 1):S 4-19.
- 2) Gallus G, Garancini P. Epidemiologic data about diabetes mellitus in Italy. *Epidemiol Prev* 1991;48-49:55-8.
- 3) American Diabetes Association. Diagnosis and classification of diabetes mellitus. *Diab Care* 2005;28(Suppl.1):S37-42.
- 4) ISTAT. Statistic yearbook 2006 - Health and Healthiness, Chapter 3, 2006.
- 5) Aprile V, Baldissera S, D'Argenzio A, et al. The national results of the QUADRI study (Quality of the Assistance to Diabetic people in the Italian Regions). Rome: ISS; 2007. (ISTISAN Reports 07/10).
- 6) Liguori G, Parlato A, Ugliano D, Russo P. "Mortality for diabetes mellitus" and "Hospital discharges for diabetes mellitus". *Osservasalute Report* 2006:120-3.
- 7) Liguori G, Russo P, Ugliano D, Sferrazza A, Parlato A. "Hospital discharges for diabetes mellitus" and "The diabetic foot: a result indicator". *Osservasalute Report* 2007 (in press).
- 8) Giampaoli S, Vanuzzo D and Research Group of the Cardiovascular Epidemiologic Observatory. Cardiovascular risk factors in Italy: a reading in reference to the National Health Plan in Italy 1998 - 2000. *G It Cardiol* 1999;12:1463 -71.
- 9) Giorda C, Nicolucci A. Type 2 Diabetes mellitus: Complications and cardiovascular risk. Torino: Centro Scientifico Editore, 2003.
- 10) American Diabetes Association. Standards of medical care in diabetes. *Diab Care* 2004;27 (Suppl. 1).
- 11) Epidemiology Group of Study, Italian Society of Diabetology. Diabetes mellitus in Italy - 2004. *Diabetes* 2004;16(4):273-400.
- 12) ISTAT. Multiscope Investigation "Health conditions, risk factors and recourse to the health services - Year 2005". 2nd of March 2005.
- 13) AMD, SIMG, SID. Assistance to the diabetic patient. AMD-SIMG-SID clinical and organizational advices. Available from [http://www.ccm.ministerosalute.it/imgs/C\\_17ccm\\_speciali\\_7\\_listaFile\\_itemName\\_1\\_file.pdf](http://www.ccm.ministerosalute.it/imgs/C_17ccm_speciali_7_listaFile_itemName_1_file.pdf) [Accessed December 2007]
- 14) American Diabetes Association (ADA). Clinical Practice Recommendations. *Diab Care* 2006;29(Suppl 1):S1-85.
- 15) Monge L, De Micheli A, on behalf of ADA. Standards of the medical treatment for the patients with diabetes mellitus. Editrice Infomedica, 2006.
- 16) Franciosi M, Pellegrini F, De Berardis G et al. The impact of blood glucose self-monitoring on metabolic control and quality of life in type 2 diabetic patients: an urgent need for better educational strategies. *Diab Care* 2001;24:1870 - 7.
- 17) De Berardis G, Pellegrini F, Franciosi M et al. Quality of care and outcomes in type 2 diabetic patients: a comparison between general practice and diabetes clinics. *Diab Care* 2004;27:398 - 406.
- 18) The QuED Study Group. Attitudes of Italian physicians towards intensive metabolic control in Type 2 diabetes. *Diabetes Nutr Metab* 2000;13:149-55.
- 19) De Berardis G, Tognoni G. Observational studies of outcomes at the proof of facts: the QuED model. *G It Farmacia Clin* 2004;18:1.
- 20) Giampaoli S, Vanuzzo D, on behalf of the Research Group of the Italian Cardiovascular Epidemiologic Observatory. Italian Atlas of Cardiovascular Diseases, I Edition 2003. *It Heart J* 2003;4(Suppl. 4):9S - 121S.
- 21) Ministero della Salute. Piano Sanitario Nazionale 2003-2005 and 2006-2008.