



Aderenza terapeutica nella patologia diabetica e nuovi supporti hi-tech

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SSD di Diabetologia

AAS2 Bassa FRIULANA-ISONTINA

- Aderenza
- Determinanti dell'aderenza
- Compenso glicemico nelle donne diabetiche
- Uso della tecnologia nell'implementazione dell'aderenza
- Donne e tecnologia

Adherence

L'OMS ha promosso il termine Adherence
nelle patologie croniche come

*“il grado di comportamento di una persona che assume
farmaci, che segue una dieta e/o stile di vita ”*

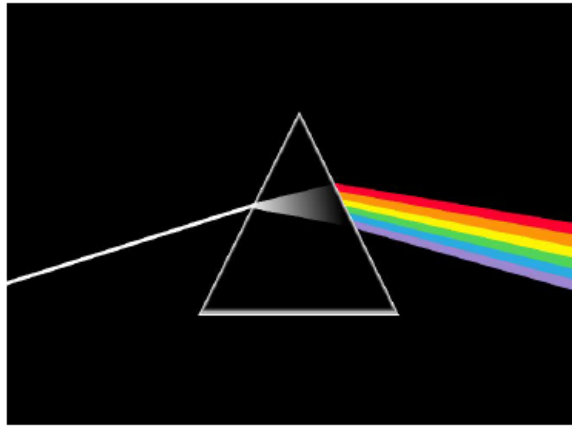
e tecnicamente può essere definito

*“il livello di coincidenza tra il comportamento del paziente
e le indicazioni date”*

La scarsa appropriatezza e la scarsa continuità/aderenza alle terapie croniche

rappresentano il maggior ostacolo al raggiungimento degli obiettivi di miglioramento della salute dimostratosi possibile negli studi clinici.

WHO. World Health Organ Tech Rep Ser. 2003;921:1-164.



Continuità ed aderenza alle terapie

L'ORGANIZZAZIONE MONDIALE DELLA SANITA' AFFERMA:

“La scarsa aderenza alle terapie croniche compromette gravemente l'efficacia del trattamento, caratterizzandosi come un elemento critico per la salute della popolazione, dal punto di vista della qualità di vita e dell'economia sanitaria

L'aderenza è un importante “modificatore” dell'efficacia dei sistemi sanitari ... Aumentare l'aderenza terapeutica può avere un impatto sulla salute della popolazione molto maggiore di ogni miglioramento di specifici trattamenti terapeutici”.



- La scarsa aderenza alle prescrizioni del medico è la principale causa di non efficacia delle terapie farmacologiche ed è associata a un aumento degli interventi sanitari, della morbidità e della mortalità, con un danno sia per i pazienti che per il sistema sanitario
- Maggior aderenza significa infatti minor rischio di ospedalizzazione, minori complicanze associate alla malattia, maggiore sicurezza ed efficacia dei trattamenti e riduzione dei costi

Aderenza e Diabete

Il diabete mellito tipo 2 è una delle condizioni cliniche in cui è più facile riscontrare **un basso livello di aderenza** al trattamento

(Mac Nabb WL Adherence in diabetes , Diabetes Care ,1997 ;20:215)

Diabetes Care. 2004 May 1;27(5):1218-1224.

A Systematic Review of Adherence With Medications for Diabetes

JOYCE A. CRAMER

OBJECTIVE — The purpose of this study was to determine the extent to which patients omit doses of medications prescribed for diabetes.

RESEARCH DESIGN AND METHODS — A literature search (1966–2003) was performed to identify reports with quantitative data on adherence with oral hypoglycemic agents (OHAs) and insulin and correlations between adherence rates and glycemic control. Adequate documentation of adherence was found in 15 retrospective studies of OHA prescription refill rates, 5 prospective electronic monitoring OHA studies, and 3 retrospective insulin studies.

RESULTS — Retrospective analyses showed that adherence to OHA therapy ranged from 36 to 93% in patients remaining on treatment for 6–24 months. Prospective electronic monitoring studies documented that patients took 67–85% of OHA doses as prescribed. Electronic monitoring identified poor compliers for interventions that improved adherence (61–79%; $P < 0.05$). Young patients filled prescriptions for one-third of prescribed insulin doses. Insulin adherence among patients with type 2 diabetes was 62–64%.

CONCLUSIONS — This review confirms that many patients for whom diabetes medication was prescribed were poor compliers with treatment, including both OHAs and insulin. However, electronic monitoring systems were useful in improving adherence for individual patients. Similar electronic monitoring systems for insulin administration could help healthcare providers determine patients needing additional support.

als with chronic diseases. Problems with poor self-management of drug therapy may exacerbate the burden of diabetes.

Several studies suggest that a large proportion of people with diabetes have difficulty managing their medication regimens (oral hypoglycemic agents [OHAs] and insulin) as well as other aspects of self-management (1,5,6). Whereas some studies that have assessed adherence among young people with type 1 diabetes (6,7), little is known about adherence to insulin regimens in patients with type 2 diabetes.

This systematic review was undertaken 1) to assess the extent of poor adherence and persistence with OHAs and insulin and 2) to link adherence rates with glycemic control.

RESEARCH DESIGN AND METHODS

Literature search

A systematic literature search was conducted to identify articles containing in-

Diabetes Care 27:1218–1224, 2004

Adherence to doses of oral antidiabetic agents is only 67% to 85%, and adherence to insulin doses is only 62% to 64%. So, patient adherence to pharmacologic treatment is clearly going to be a barrier.

Negli Studi dedicati ai farmaci per il diabete la prevalenza dell'aderenza si aggira intorno a percentuali piuttosto basse che possono arrivare fino al 46%.

Nella pratica clinica significa per un diabetologo dover acquisire che meno della metà dei pazienti che ha in cura aderisce alla terapia concordata

ADERENZA AI FARMACI PER IL DIABETE: REVISIONE SISTEMATICA

| Strumenti di misurazione dell'aderenza | Prevalenza dell'aderenza, % (n. di studi) |
|--|--|
| OAD | 38.5–93.1 (10) |
| Misure obiettive | |
| MPR | 46.0–89.8 (4) |
| Altri | 75.3–93.1 (2) |
| Misure soggettive | 38.5–83.6 (4) |
| OAD in monoterapia o una combinazione di OAD e insulina | 39.0–92.3 (11) |
| Misure obiettive: MPR | 53.8–69.0 (3) |
| Misure soggettive | |
| MMAS-4 | 40.0–76.2 (7) |
| Altri | 39.0–92.3 (7) |

Medication Possession Ratio = MPR

rapporto tra numero di giorni di terapia dispensata e
giorni totali di terapia in un certo periodo di tempo,
se il valore risulta < 0,8 (o < 80%) è indicativo di mancata aderenza.

Krass I, Schieback P, Dhippayom T.
Adherence to diabetes medication: a
systematic review. Diabet Med. 2015

OAD: Antidiabetici orali; **MPR:** Medical Possession Ratio; **MMAS-4,** Morisky
Medication-Taking
Adherence Scale (4-item): Scala Morisky di aderenza all'assunzione del
farmaco (4 voci)



Determinants of Adherence to Diabetes Medications: Findings From a Large Pharmacy Claims Database

Diabetes Care 2015;38:604–609 | DOI: 10.2337/dc14-2098

M. Sue Kirkman,¹ Megan T. Rowan-Martin,² Rebecca Levin,³ Vivian A. Fonseca,⁴ Julie A. Schmittiel,⁵ William H. Herman,⁶ and Ronald E. Aubert⁷

Men were significantly more likely to be adherent than women.

In our study, characteristics that suggest a “healthier” patient (being younger, new to diabetes therapy, and taking few other medications) were all associated with lower odds of adherence to antidiabetic medications.

Our findings that use of mail order channels is associated with adherence supports the results of other studies on medication adherence

Table 2—Odds ratios, 95% CI, and *P* values for multivariate model of factors associated with diabetes medication adherence

| | Odds ratio | 95% CI | <i>P</i> |
|--|------------|--------------|----------|
| Patient factors | | | |
| Patient exposure to diabetes therapy | | | |
| New to therapy vs. continuing therapy | 0.39 | 0.38, 0.40 | <0.0001 |
| Patient age-group (years) | | | |
| 25–44 vs. 45–64 | 0.51 | 0.49, 0.53 | <0.0001 |
| 65–74 vs. 45–64 | 1.27 | 1.23, 1.30 | <0.0001 |
| >75 vs. 45–64 | 1.41 | 1.37, 1.44 | <0.0001 |
| Patient sex | | | |
| Male vs. female | 1.14 | 1.12, 1.16 | <0.0001 |
| Patient education | | | |
| Vocational vs. high school equivalent | 1.06 | 0.92, 1.22 | 0.4105 |
| College grad vs. high school equivalent | 1.20 | 1.17, 1.23 | <0.0001 |
| Graduate school vs. high school equivalent | 1.41 | 1.36, 1.46 | <0.0001 |
| Patient income | | | |
| \$30k to \$60k vs. <\$30k | 0.93 | 0.91, 0.95 | <0.0001 |
| >\$60k vs. <\$30k | 1.27 | 1.23, 1.30 | <0.0001 |
| Patient geographic region | | | |
| Midwest vs. West | 1.12 | 1.08, 1.16 | <0.0001 |
| Northeast vs. West | 1.04 | 1.00, 1.08 | 0.0448 |
| South vs. West | 1.00 | 0.97, 1.03 | 0.9475 |
| Prescription factors | | | |
| Prescription drug channel: mail vs. retail | 2.09 | 2.04, 2.13 | <0.0001 |
| Total pill burden | 1.22 | 1.21, 1.22 | <0.0001 |
| Out-of-pocket costs (30 days) | 0.89 | 0.89, 0.89 | <0.0001 |
| Prescriber factors | | | |
| Specialty: endocrinologist vs. primary care | 1.01 | 0.96, 1.07 | 0.6076 |
| Specialty: other specialist vs. primary care | 0.91 | 0.89, 0.94 | <0.0001 |
| Prescriber age | 1.002 | 1.002, 1.003 | 0.004 |

The Role of Gender in Cost-Related Medication Nonadherence Among Patients with Diabetes

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Objective: Under 50% of type 2 diabetic patients achieve the recommended glycemic control. One barrier to glycemic control is patients' cost-related nonadherence to medications. We hypothesize gender differences in medication nonadherence due to costs among diabetic patients.

Methods: US National Health Interview Survey (2011 to 2014) data yielded 5260 males and 6188 females with diabetes for over a year. We applied 2 analytic methods (A and B below) across multiple outcome measures (1 to 4) of medication nonadherence due to cost. The key independent variable was participant's gender.

Results: Across methods and measure, females consistently report significantly higher rates of medication nonadherence due to costs. Pearson's χ^2 showed that female patients were more likely to (1) skip medication (13.5%–10.2%; $P < .001$), take less than prescribed medication (13.9%–10.5%; $P < .001$), delay filling prescriptions (16.8%–12.5%; $P < .001$), and ask doctors to prescribe lower-cost alternative medications (31.8%–28.0%; $P < .001$). Controlling for covariates, logistic regression models found females more likely to skip medication (OR, 1.30; 95% CI, 1.09–1.55), take less than prescribed medication (OR, 1.26; 95% CI, 1.06–1.50), delay filling prescriptions, (OR, 1.29; 95% CI, 1.11–1.50), and request lower-cost medication (OR, 1.17; 95% CI, 1.04–1.32). Our results report other factors that influence medication adherence, including socioeconomic and health status variables.

Conclusions: A significant gender-based disparity exists on cost-related nonadherence of medication among diabetic patients. Health care providers and policy-makers should pay close attention to find ways to address cost-related nonadherence of medication among patients with chronic illness, especially among female patients. (J Am Board Fam Med 2018;31:743–751.)

Table 1. Analytical Sample Description in Percentages (Unweighted Sample N = 11,448)

| Variables | No. | All Participants | Males | Females | <i>P</i> Values |
|------------------------------|-------|------------------|------------------|------------------|-----------------|
| Skipped medication | 1,349 | 11.8 (11.1–12.6) | 10.2 (9.2–11.3) | 13.5 (12.4–14.7) | <.001 |
| Took less medication | 1,413 | 12.2 (11.5–13.0) | 10.5 (9.5–11.6) | 13.9 (12.8–15.1) | <.001 |
| Delayed filling prescription | 1,671 | 14.6 (13.8–15.5) | 12.5 (11.4–13.6) | 16.8 (15.6–18.1) | <.001 |
| Lower-cost medication | 3,281 | 29.9 (28.8–31.0) | 28.0 (26.4–29.6) | 31.8 (30.2–33.4) | <.001 |
| Age-y | | | | | |
| 18 to 29 | 232 | 2.5 (2.1–2.9) | 2.0 (1.6–2.6) | 2.9 (2.4–3.6) | .006 |
| 30 to 44 | 1,098 | 10.2 (9.5–10.9) | 9.9 (8.9–10.9) | 10.5 (9.5–11.5) | |
| 45 to 64 | 4,988 | 47.3 (46.0–48.5) | 49.3 (47.4–51.1) | 45.3 (43.5–47.1) | |
| 65 and above | 5,130 | 40.1 (38.8–41.3) | 38.8 (37.1–40.6) | 41.3 (39.6–43.0) | |

Association between the 8-item Morisky medication adherence scale (MMAS-8) score and glycaemic control among Chinese diabetes patients.

Wong MC¹, Wu CH², Wang HH^{1,3}, Li HW², Hui EM², Lam AT², Chung RY¹, Yip BH¹, Morisky DE⁴.

 Author information

Erratum in
[Erratum](#). [J Clin Pharmacol. 2017]

Abstract

Adherence with oral hypoglycaemic agent is crucial to achieve optimal glycaemic control. The 8-item Morisky Medication Adherence Scale (MMAS-8) has been frequently used, yet the association between MMAS-8 score and glycaemic control among Chinese diabetes patients is largely unknown. Two general out-patient clinics were randomly selected in a district with socio-demographic characteristics representative of the entire Hong Kong population. A consecutive sample of adult type-2 diabetes patients currently taking oral hypoglycaemic agents was included. The glycaemic control was reflected by the level of hemoglobin A1c. Patients with HbA1c $\geq 7.0\%$ were evaluated. The average age of 63.2 years (SD 9.7) and male proportion of 46.5% were noted. The proportion of poor medication adherence (MMAS-8 score ≤ 5) was 46.5%. When adjusted for medication use, and health characteristics, the MMAS-8 score was associated with glycaemic control ($\beta = -0.026$, $P = .007$). [The MMAS-8 score had a weak and negative correlation with glycaemic control](#) when predicting glycaemic control in clinical practice.

[Intern Med J.](#) 2018 Jun;48(6):728-731. doi: 10.1111/imj.13808.

Adherence to medication, glycaemic control and hospital attendance in young adults with type 2 diabetes.

Kunasegaran S¹, Beig J¹, Khanolkar M¹, Cundy T^{1,2}.

 Author information

Abstract

Type 2 diabetes is becoming common among people in their 20s and 30s. Glycaemic control is suboptimal in this group and is associated with poor medication adherence. We studied medication adherence over a 24-month period in all diabetes clinic registrants ($n = 266$) between the ages of 18 and 39 years. We reviewed their glycaemic control using mean HbA1c over the study period and examined hospital records to determine the number of hospital attendances during this time. We found that less than half the group (47%) had good adherence ($>90\%$) and 21% of the group had very poor adherence ($<50\%$). Mean adherence was slightly poorer in women compared to men (73% vs 76%, $P = 0.04$). There was a marked inverse relationship between adherence and glycaemic control. [Mean HbA1c is 70 mmol/mol among those with good adherence and mean HbA1c is 97 mmol/mol among those with very poor adherence \(\$P < 0.05\$ \)](#). Fifty-seven per cent of the study group had at least one hospital attendance during this time. Eighty-eight hospital attendances were due to a medical cause. Study of trend showed more medical admissions among those with very poor adherence ($P = 0.03$). Mean HbA1c was higher in those who required medical admissions (87 mmol/mol vs 75 mmol/mol) when compared to those with no hospital attendance. Our study shows that poor adherence is common and significantly related to glycaemic control as well as unplanned hospital attendances for medical conditions. Despite limitations, our study provides valuable information on medication adherence and its impact on glycaemic control and morbidity among young people with type 2 diabetes.

RESEARCH ARTICLE

Gender-Disparities in Adults with Type 1 Diabetes: More Than a Quality of Care Issue. A Cross-Sectional Observational Study from the AMD Annals Initiative

Valeria Manicardi¹*, Giuseppina Russo²*, Angela Napoli³*, Elisabetta Torlone⁴*, Patrizia Li Volsi⁵*, Carlo Bruno Giorda⁶*, Nicoletta Musacchio⁷*, Antonio Nicolucci⁸*, Concetta Suraci⁹*, Giuseppe Lucisano⁸*, Maria Chiara Rossi⁸*, AMD Annals Study Group¹



| Favorable outcome indicators | M (%) | F (%) | p-value |
|--|-------|-------|---------|
| HbA1c $\leq 7.0\%$ (≤ 53 mmol/mol) | 25.6 | 20.4 | <0.0001 |
| LDL-C <100 mg/dl | 41.4 | 41.5 | 0.91 |
| BP $\leq 130/80$ mmHg | 61.5 | 69.5 | <0.0001 |
| Unfavorable outcome indicators | | | |
| HbA1c $> 8.0\%$ (> 64 mmol/mol) | 41.6 | 47.3 | <0.0001 |
| LDL-C ≥ 130 mg/dl | 22.1 | 20.7 | 0.02 |
| BP $\geq 140/90$ mmHg | 31.5 | 25.2 | <0.0001 |
| BMI ≥ 30 Kg/m ² | 8.7 | 9.8 | 0.002 |
| GFR ≤ 60 ml/min | 7.8 | 9.6 | <0.0001 |
| MAU | 30.1 | 24.7 | <0.0001 |

Gender Differences in Living with Diabetes Mellitus

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ABSTRACT

The aim of this review is to discuss the gender difference among diabetic population. Metabolic control, age and gender significantly affect their psychosocial responses to disease. Psychosocial problems may also occur secondary to negative diabetes related experiences including diagnosis, increased stress and onset of complications. Although significant problems do not occur in all diabetic population, they occur in few patients. More work is needed in the area of identifying those patients having adjustment difficulties to diabetic related challenges. This review indicates that male diabetics are observed to be living more effectively with diabetes, lesser depression and anxiety but more energy and better positive wellbeing

La tecnologia può avere un ruolo????



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La parola tecnologia indica le tecniche utilizzate per produrre oggetti e migliorare le condizioni di vita dell'uomo: non si tratta quindi solo di realizzazioni concrete, ma anche di procedure astratte. La tecnologia ha un legame molto stretto con la scienza, di cui non è un semplice aspetto applicativo. La storia della tecnologia si intreccia con la storia dell'umanità: in particolare negli ultimi secoli il progresso tecnologico ha iniziato a correre a velocità sempre maggiori

Con *tecnologia*, infatti, si indica, più che l'insieme di singoli oggetti, lo sviluppo di strumenti o di macchine con cui si è risolto un problema o è stato migliorato un aspetto della nostra vita quotidiana. In questo senso anche lo sviluppo dei primissimi utensili nella preistoria, dai primi aghi in osso per cucire alle prime pentole in argilla, rappresenta un progresso tecnologico.

Tecnologie innovative per ottimizzare l'aderenza

[Home](#) > [Aziende farmaceutiche](#) > [Servizi](#) >

[Soluzioni per lo sviluppo del brand e l'accesso al mercato](#) >

| Medicina scienza e ricerca

Aderenza alle terapie: app, sms e telefonate per non dimenticare la pillola

Promemoria digitali per ricordarsi quali farmaci assumere e quando farlo. Al via il progetto "Seguilaterapia", un'idea di Mylan rivolta in particolare ai più anziani

di [Redazione Aboutpharma Online](#)



4 giugno 2015



Una notifica sullo smartphone, un sms, oppure una chiamata al telefono di casa. Sono i tre strumenti, per ricordare al paziente – in particolare a quello cronico e anziano – quali medicine assumere durante la giornata, alla base del progetto "[Seguilaterapia](#)" presentato oggi a Roma.

L'iniziativa, ideata e sponsorizzata da **Mylan**, consiste nella sperimentazione di un servizio di promemoria digitale o telefonico con lo scopo di ricordare al paziente di assumere correttamente i farmaci del proprio piano terapeutico oppure di allertarlo quando la sua scorta di pillole sta terminando. Nei prossimi due anni il progetto dovrebbe coinvolgere quasi 20 mila persone. I promemoria saranno generati in base alle informazioni raccolte tramite l'interfaccia di **Netmedica** dai medici di

Il nostro obiettivo è aiutare i pazienti ad ottenere il meglio dal loro trattamento, anche attraverso l'uso della tecnologia, se appropriato. Inoltre supportiamo l'avanzare della terapia aiutando i team clinici a ricevere feedback sui loro pazienti.

e in tutta Europa includono:

temperatura e aderenza

notifiche per ricordare ai pazienti di seguire la terapia

Adesione per il paziente

I nostri infermieri appositamente formati, aiutiamo i pazienti a comprendere meglio le terapie e l'aderenza al trattamento. Una ricerca condotta nel Regno Unito ha mostrato che la consulenza di Alcura sono stati ben recepiti, con più del 97% dei pazienti che ha dato un voto da eccellente a buono.

I nostri pazienti, dai nostri infermieri, li aiutano ad autosomministrarsi in maniera sicura i loro farmaci a casa. Siamo convinti che dare ai pazienti questa indipendenza possa migliorare di molto la loro qualità della vita.

Aderenza del paziente

I nostri follow-up e rassicurazioni utili in ogni Paese.

Inoltre come i tracker remoti possono essere usate per supportare o mantenere l'aderenza.

I risultati del nostro sondaggio ai pazienti nel 2012 – basati sull'Artrite reumatoide e l'osteoporosi. Report internazionale Abacus di ricerca indipendente 2013.

Can Technology Improve Adherence to Long-Term Therapies?

Gérard Reach, M.D., FRCP (Edin)

Background:

Therapeutic nonadherence is defined as the lack of equivalence between the behavior and the prescribed medical treatment. Consequences of nonadherence include not only health care costs but also loss of savings. Thus, this issue gets paramount importance in contemporary medicine.

Method:

The aim of this article is to discuss the relationships between technology and adherence by asking the following three questions. (1) How can technology be used to monitor patient adherence? (2) Considering the mechanisms of nonadherence in chronic diseases, is there room for technology in interventions aimed to improve patient adherence? (3) What about adherence to technology in diabetes care?

Results and Conclusion:

Technology may help improve adherence to long-term therapies by (1) giving a concrete representation of adherence rewards, (2) overcoming immediate obstacles to adherence, such as the fear of hypoglycemia, and (3) providing an opportunity for patient–doctor conversations. This assumes, however, that both the patient and the doctor are convinced that technologies are useful.

It is important to remember that almost all the interventions effective for improving patient adherence in long-term care were complex, including a combination of more convenient care, information, reminders, self-monitoring, manual telephone follow-up, reinforcement, counseling, family therapy, psychological therapy, crisis intervention, and supportive care.¹⁰ In conclusion, in this area, as in others, *technè* should not be seen as a panacea: it is only a part of the solution.

REVIEW ARTICLE

Open Access



Managing diabetes in the digital age

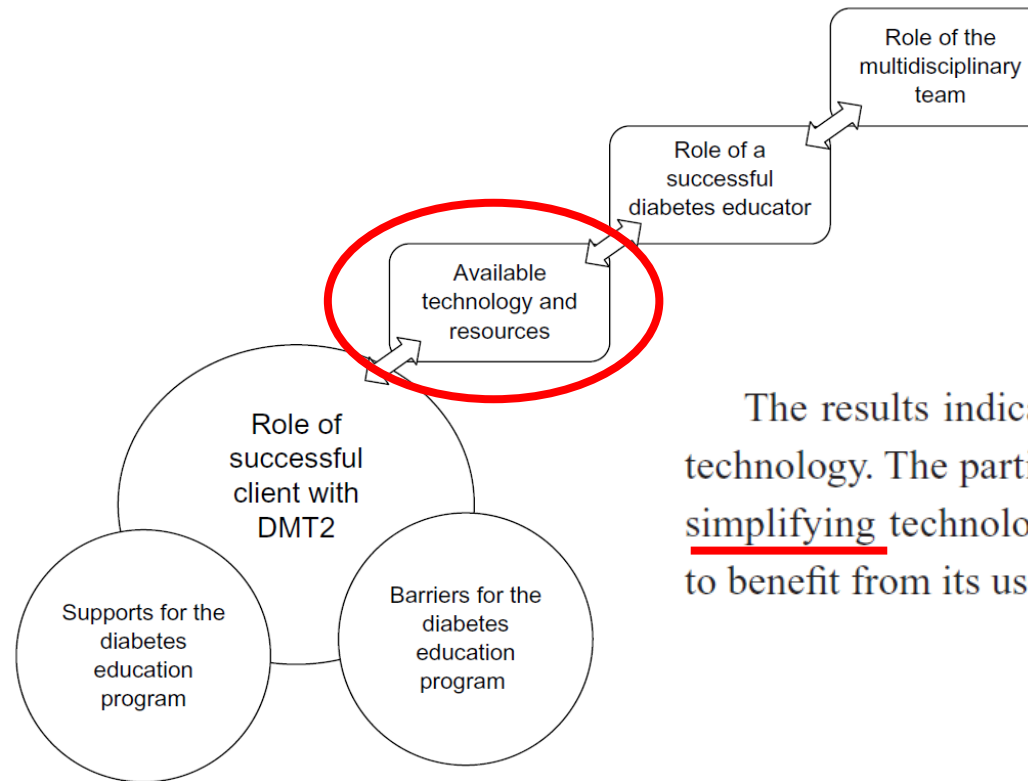
Viral N. Shah^{1,2} and Satish K. Garg^{1,2,3*}

Abstract

The prevalence of diabetes is rising globally. Poor glucose control results in higher rates of diabetes-related complications and an increase in health care expenditure. Diabetes self-management education (DSME) training has shown to improve glucose control, and thus may reduce long-term complications. Implementation of diabetes self-management education programs may not be feasible for all the institutions or in developing countries due to lack of resources and higher costs associated with DSME training. With the increasing use of smartphones and Internet, there is an opportunity to use digital tools for training people with diabetes to self-manage their disease. A number of mobile applications, Internet portal, and websites are available to help patients to improve their diabetes care. However, the studies are limited to show its effectiveness and cost-benefits in diabetes self-management. In addition, there are many challenges ahead for the digital health industry. In this review, we assess the use of newer technologies and digital health in diabetes self-management with a focus on future directions and potential challenges.

Keywords: Diabetes, Digital health, Artificial pancreas, Closed-loop system, Electronic health records, Mobile health, mHealth, Diabetes self-management, Mobile applications

Education and technology used to improve the quality of life for people with diabetes mellitus type II



The results indicate mixed views on the current use of technology. The participants emphasized the importance of simplifying technology in order to allow more individuals to benefit from its use.

Figure 1 Interactive components of diabetes education.

Table 1 Mobile apps to support diabetes management^{a,b}

| Diet | Physical activity | Blood glucose e-log book |
|--------------------------|------------------------------|---------------------------|
| Healthy out | Track 3 | Diabetic |
| Foodily | My Fitness pal | Diabetes in check |
| Whole food market recipe | Moves | Diabetes companion |
| CarbControl | Nike + running | My sugar Junior |
| Lose it | Strava | Go meal |
| Weight watchers | UP by jawbone | Glooko |
| Daily burn | Endomondo | Glucose buddy |
| Calorie counter PRO | GymPact | DiabetesApp lite |
| iCookbook diabetic | FitnessFast | My net diary |
| Fooducate | Pacer | Glucose companion |
| EatLocal | | |
| Calorie king | | |
| HEALTHeDiabetes | | |
| Glucose monitoring | Insulin dose calculators | Relaxation and meditation |
| iBGStar | Insulin calculator | Calm |
| Telcare | iBolus calc | Sleep cycle |
| | Insulin dose calculator pro | Equanimity |
| | Diabetes personal calculator | |
| Diabetes education | Rapid calc diabetes manager | Medication adherence |
| WebMD | PredictBGL | MyMedSchedule |
| Diabetes insight | EZ insulin calculator | MyMeds |
| Up to date | Insulin units | MedSimple |
| Managing type 1 Diabetes | | Pillmanager |
| Diabetes EDC | | Pill reminder |
| Diabetes @point of care | | RxmindMe Prescription |
| | | Pillboxie |

^aMost apps have more than one feature. ^bthe list is not comprehensive, there are number of apps available in each category

Management of diabetes is generally self-directed, and individuals need to make day-to-day decisions related to controlling their disease

Introduction of **automatic bolus calculators** integrated in the insulin pump (bolus wizard) have shown to help patients to more accurately meet prandial insulin dosage requirements, improve postprandial glycemic excursions, and achieve optimal glycemic control

Smartphone-Based Glucose Monitors and Applications in the Management of Diabetes: An Overview of 10 Salient “Apps” and a Novel Smartphone-Connected Blood Glucose Monitor

Joseph Tran, BS, Rosanna Tran, BS, and John R. White, Jr., PA, PharmD



Figure 1. Diabetes Buddy app.

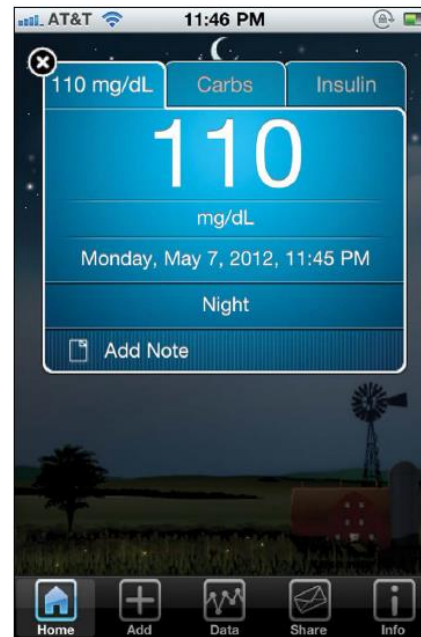


Figure 3. WaveSense Diabetes Manager app.

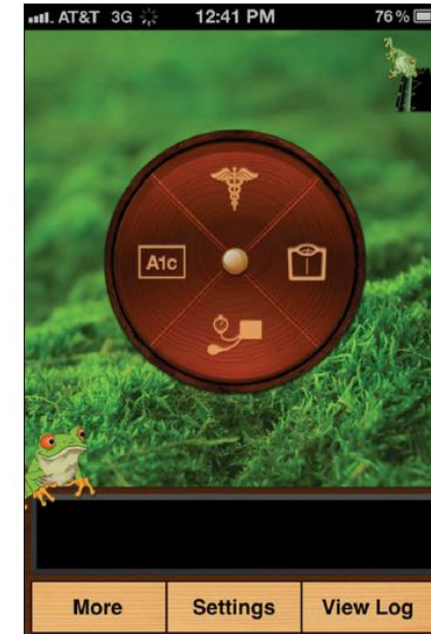
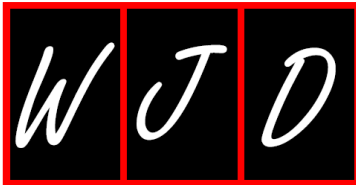


Figure 2. LogFrog DB app.

| Table 1. Summary of Features on 10 Smartphone Apps for Diabetes Self-Management | | | | | | | | | | |
|--|----------------|--------------|----------------|----------|---------------|-----------|---------|--------|----------------------------|---------------------|
| Name | Diabetes Buddy | Diabetes Log | Diabetes Pilot | Diamedic | Glucose Buddy | iDiabetes | LogFrog | TRACK3 | WaveSense Diabetes Manager | Your Diabetes Diary |
| Price | \$6.99 | Free | \$14.99 | \$3.99 | Free | \$1.99 | \$2.99 | \$4.99 | Free | \$4.99 |
| Features | | | | | | | | | | |
| Usability | Easy | Easy | Easy | Easy | Easy | Mediocre | Easy | Easy | Easy | Easy |
| Glucose tracking | × | × | × | × | × | × | × | × | × | × |
| Color-coded for hyper- and hypoglycemia | | | | × | × | | | × | × | |
| Medication alarm | | | | | × | | × | | | |
| Insulin tracking | × | × | × | × | × | | × | × | × | × |
| Carbohydrate tracking | × | × | × | × | × | | × | × | × | × |
| Activity tracking | × | | × | × | × | | × | × | | × |
| Weight tracking | × | | × | × | | | × | × | | × |
| Blood pressure tracking | × | | × | × | | | × | | | × |
| Meal tagging* | × | | × | | × | | | × | × | |
| Food database | × | | × | | ~ | | | × | | |
| Note taking | × | × | × | × | × | × | × | × | × | × |
| Trend charts | × | | × | × | × | × | × | × | × | × |
| GoogleDoc synchronizing | | | | | | | × | | | |
| Medical exam notes | | | | × | | | × | | | × |
| Landscape mode | | | × | | | | × | | × | × |
| Logbook view | | × | × | × | × | × | × | | | × |
| Averages | × | | × | × | × | | × | × | × | × |
| Electronic synchronizing with HCP | | × | × | × | × | × | × | × | × | × |
| *Meal tagging is a feature similar to Facebook tagging that allows users to search a food database for specific meals by brand, categories, or restaurant names. | | | | | | | | | | |

Le applicazioni esaminate in questo articolo dimostrano una straordinaria versatilità, usabilità e funzionalità. Queste applicazioni forniscono anche vie alternative nella gestione cronica di stati multipli di malattia oltre al diabete.



Technology and diabetes self-management: An integrative review

Caralise W Hunt

PubMed, and Psych INFO databases using the search terms:

diabetes self-management, technology, type 2 diabetes, smartphones, cell phones, and diabetes mellitus covering the years from 2008-2013.

A meta-analysis of 22 intervention studies found that mobile phone interventions led to statistically significant improvements in glycemic control and self-management.

Diabet Med 2011; **28**: 455-463

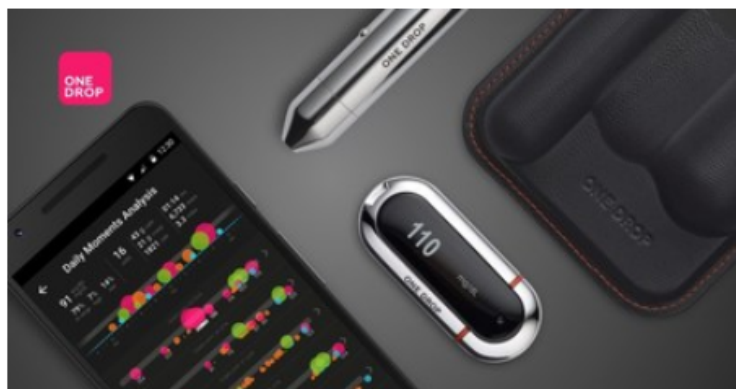
Diabete, solo il 10% dei pazienti accede a nuove tecnologie terapeutiche

A dirlo è stato Luigi Morgese, direttore della divisione Medtronic diabete in occasione dell'evento "Meet the scientist - diabete: la tecnologia che mantiene le promesse", organizzato il 26 settembre a Milano dal Medtronic

di [Redazione Aboutpharma Online](#)



26 settembre 2017



“In Italia l'utilizzo di tecnologie per la gestione del diabete insulino dipendente è inferiore a quello della media europea, di per sé inferiore a quella statunitense”. A dirlo è stato Luigi Morgese, direttore della divisione Medtronic diabete in occasione dell'evento “Meet the scientist – diabete: la tecnologia che mantiene le promesse”, organizzato il 26 settembre a

Milano dal Medtronic.

Da noi, secondo i dati forniti da Morgese, solo il 10% di quasi trecentomila diabetici di tipo 1 ricorre al microinfusore di insulina contro una media europea del 20% e una americana che sale al 40%.

Per consultazione

La terapia insulinica sottocutanea continua (CSII) in Italia. Terza indagine nazionale

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G. Lepore^{3*}, R. Bonfanti⁴, L. Bozzetto⁵,
A. Corsi⁶, V. Di Blasi⁷, A. Girelli⁸,
G. Grassi⁹, D. Iafusco¹⁰, I. Rabbone¹¹,
R. Schiaffini¹² e il Gruppo di Studio
Italiano sulla Diffusione della CSII**

G It Diabetol Metab 2015;35:121-129

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Parole chiave: diabete mellito, terapia insulinica
sottocutanea continua, microinfusore per insulina

Key words: diabetes mellitus, continuous subcutaneous

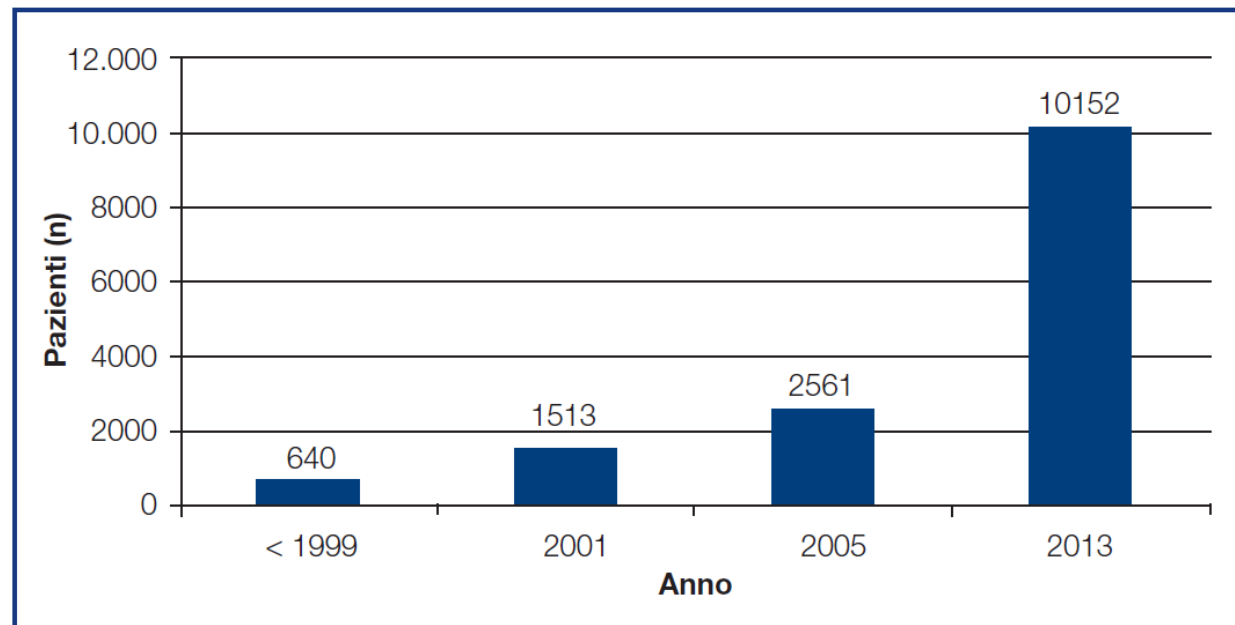


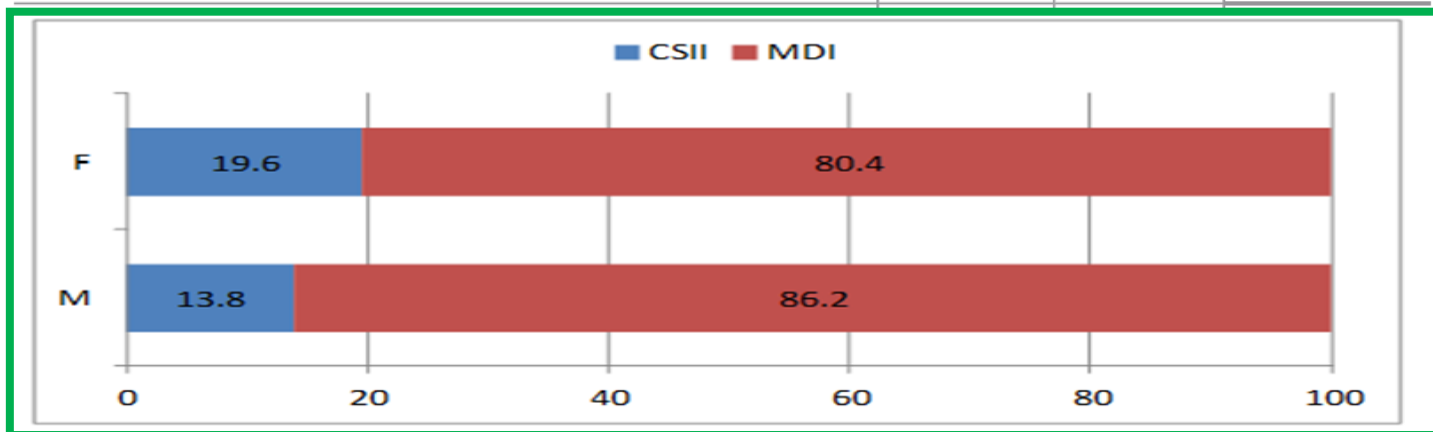
Figura 1 *Pazienti in terapia con microinfusore per insulina in Italia.*

L'età media dei pazienti era di $34,8 \pm 16$ anni e in particolare i pazienti seguiti nelle strutture per adulti avevano un'età media di $40,3 \pm 13$ anni (range 5-87, mediana 40), mentre i pazienti seguiti nelle strutture pediatriche avevano un'età media di $12,6 \pm 4$ anni

Prevale il sesso femminile anche se, rispetto al 2005, vi è stato un modesto incremento del sesso maschile (attualmente 43% vs 38% nel 2005). Il rapporto M/F è di 42/58 tra gli adulti e 50/50 tra i pediatrici.

Table 2. Quality indicators of diabetes care according to gender.

| Process indicators | M (%) | F (%) | p-value |
|--|-------|-------|---------|
| HbA1c | 93.5 | 93.7 | 0.45 |
| Lipid profile | 71.5 | 71.8 | 0.47 |
| Blood pressure | 75.8 | 76.3 | 0.34 |
| Renal function | 50.8 | 51.4 | 0.27 |
| Eye examination | 41.0 | 41.3 | 0.55 |
| Favorable outcome indicators | | | |
| HbA1c $\leq 7.0\%$ (≤ 53 mmol/mol) | 25.6 | 20.4 | <0.0001 |
| LDL-C <100 mg/dl | 41.4 | 41.5 | 0.91 |
| BP $\leq 130/80$ mmHg | 61.5 | 69.5 | <0.0001 |
| Unfavorable outcome indicators | | | |
| HbA1c >8.0% (>64 mmol/mol) | 41.6 | 47.3 | <0.0001 |
| LDL-C ≥ 130 mg/dl | 22.1 | 20.7 | 0.02 |
| BP $\geq 140/90$ mmHg | 31.5 | 25.2 | <0.0001 |
| BMI ≥ 30 Kg/m ² | 8.7 | 9.8 | 0.002 |
| GFR ≤ 60 ml/min | 7.8 | 9.6 | <0.0001 |
| MAU | 30.1 | 24.7 | <0.0001 |



M:1 su 4

F: 1 su 5



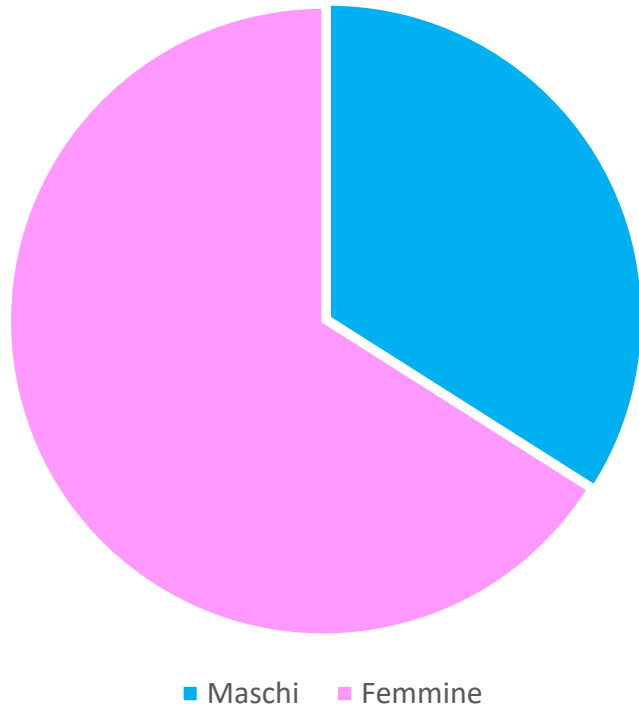
MDI vs CSII

M:1 su 3

F: 1 su 4

Casistica Centro Diabetologico AAS2

20% dei pazienti Diabetici tipo1 è portatore di
pompa insulinica



2/3 dei pazienti con
microinfusore è di
sesso femminile età
media 42 anni

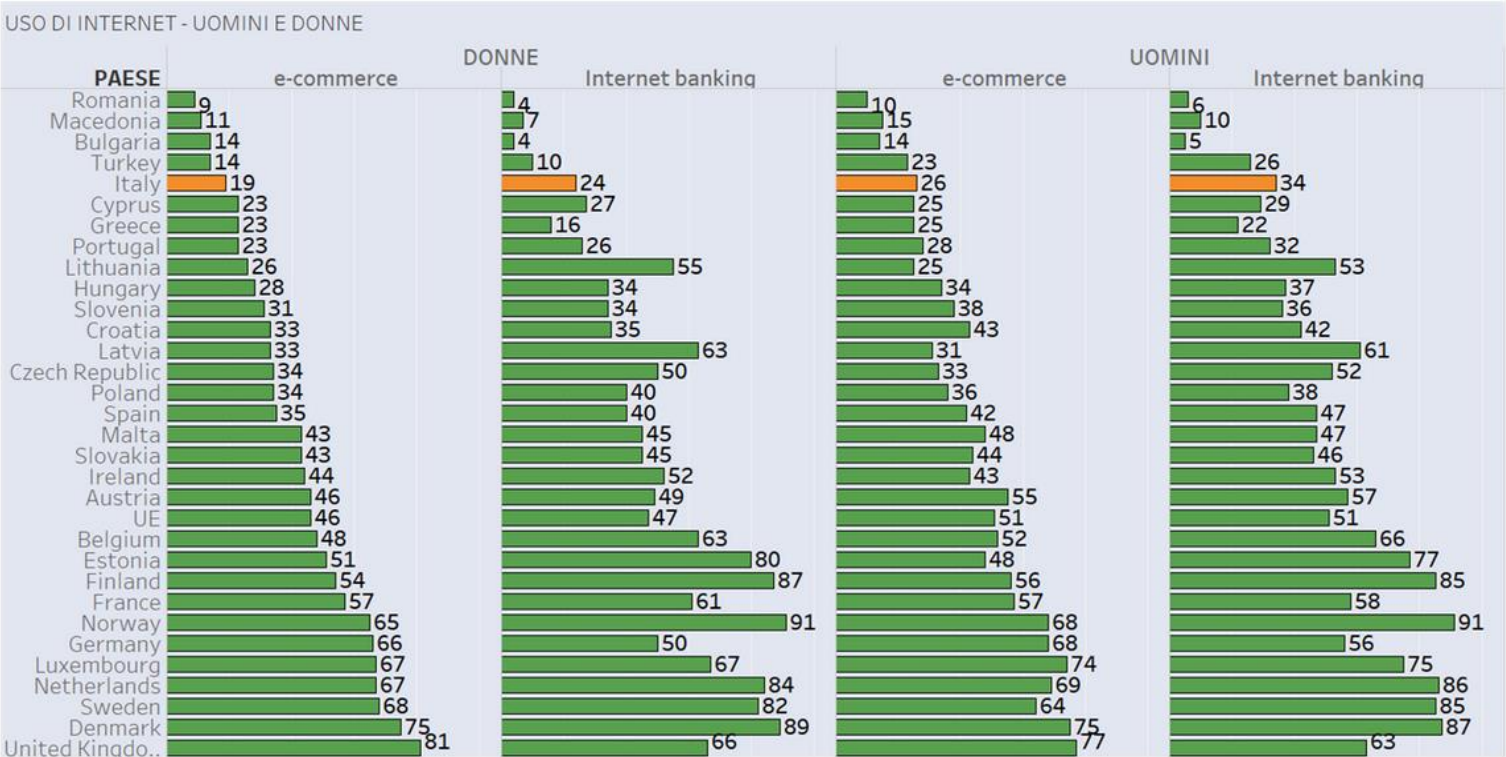
Più tecnologia per le donne: ecco cosa serve per far cambiare passo all'Italia

L'Italia è fanalino di coda europeo per uso femminile delle tecnologie informatiche. Un gap enorme con Germania, Francia, Regno Unito, Spagna che forse spiega meglio di mille altre analisi perché la nostra economia è al palo e la disoccupazione non scende

di Gianni Balduzzi



Un sintomo, poichè in origine probabilmente vi è infatti anche una dimestichezza con tutto ciò che riguarda la tecnologia che potremmo definire imbarazzante nel nostro Paese. Gli italiani usano poco internet per operazioni che abbiano un minimo di complessità e che coinvolgano ambiti che vadano oltre il ludico. Negli acquisti in rete e nell'internet banking sia uomini che donne in Italia appaiono titubanti, la frequenza di utilizzo è metà di quella francese o tedesca.



Anno 2017

CITTADINI, IMPRESE E ICT

Ancora differenze sociali e territoriali nell'uso di Internet

Rispetto al 2016 aumenta la quota di persone di 6 anni e più connesse in Rete nei 12 mesi precedenti l'intervista (dal 63,2% al 65,3%) e quella di chi si connette giornalmente (da 44,6% a 47,6%) (Prospetto 1). L'uso del web è più frequente tra i 15-24enni (oltre 92%) ma va rilevato il forte recupero in quest'ultimo anno degli 55-59enni (da 62,7% a 68,2%). Il rapporto con tali tecnologie si conferma significativamente diverso tra la popolazione maschile e femminile e tale divario resta stabile rispetto all'anno precedente. Navigano su Internet il 69,5% degli uomini e il 61,3% delle donne, va però sottolineato che fino ai 44 anni, le differenze di genere sono molto contenute.

PROSPETTO 1. PERSONE DI 6 ANNI E PIÙ CHE HANNO USATO INTERNET NEGLI ULTIMI 12 MESI PER SESSO, CLASSE DI ETÀ, TERRITORIO E CONDIZIONE OCCUPAZIONALE (a). Anni 2011-2017, valori per 100 persone di 6 anni e più con le stesse caratteristiche.

| SESSO, CLASSI DI ETÀ, RIPARTIZIONI GEOGRAFICHE E CONDIZIONE OCCUPAZIONALE | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Maschi | 56,7 | 58,3 | 60,3 | 62,4 | 65,0 | 67,6 | 69,5 |
| Femmine | 46,7 | 47,1 | 49,8 | 52,8 | 55,8 | 59,0 | 61,3 |
| Totale | 51,5 | 52,5 | 54,9 | 57,5 | 60,2 | 63,2 | 65,3 |



ECCO COME SARÒ FRA 30 ANNI