بسم الله الرحمن الرحيم

# Consumer Health Informatics

Abdulkarim Almuhanna MD, CPHIMS - KFSHRC . Riyadh



# Abdulkarim Almuhanna MD, CPHIMS Ophthalmologist Consultant Health Informatics Project Executive for CIS @ King Faisal Specialist Hospital – Riyadh MCI Department



#### **Thank You**

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• Define CHI

- Current Status of Health info on the Net
- Challenges facing CHI
- Consumer Health Applications for Smart Devices
- Numbers and Statistics

# "Use of information technology to support the health and communication needs of patients and lay persons"

Brennan PF. (1999) Brennan PF. (1999). Health informatics and community health: support for patients as collaborators in care. *Methods of Information in Medicine. 38,* 274-8,

2 Ô 

**Integration of consumer** health information and information technology in an environment of shared healthcare decision-making that supports effective selfhealth action. Lewis, D. & Friedman, C.

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"Is a form of medical information technology geared towards delivering better health-related decision-making based from the consumer's perspective. With the aid of modern technology."

The American Informatics Association



• General Public – Not Only

## patients

- Information Tech Tools
- Communication Tool





- Word of Mouth expert Individual
- Relative / Friend
- Healthcare Provider Health institutes
- Printed Material Books, Mag.
- Mass Media Radio, TV
- The Internet
- Smart Devices Applications



- "As you said, Doctor"
- Decision Maker?(s)
- Knowledgeable Patient
- Consumer Health Informatics
- Empowered Patient



- Early 60s
- e-Mail
- WWW protocol 80s
- Social Networks

#### INTERNET USAGE STATISTICS The Internet Big Picture

World Internet Users and Population Stats

WORLD INTERNET USAGE AND POPULATION STATISTICS June 30, 2012									
World Regions	Population ( 2012 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2012	Users % of Table			
<u>Africa</u>	1,073,380,925	4,514,400	167,335,676	15.6 %	3,606.7 %	7.0 %			
<u>Asia</u>	3,922,066,987	114,304,000	1,076,681,059	27.5 %	841.9 %	44.8 %			
Europe	820,918,446	105,096,093	518,512,109	63.2 %	393.4 %	21.5 %			
Middle East	223,608,203	3,284,800	90,000,455	40.2 %	2,639.9 %	3.7 %			
North America	348,280,154	108,096,800	273,785,413	78.6 %	153.3 %	11.4 %			
Latin America / Caribbean	593,688,638	18,068,919	254,915,745	42.9 %	1,310.8 %	10.6 %			
<u>Oceania / Australia</u>	35,903,569	7,620,480	24,287,919	67.6 %	218.7 %	1.0 %			
WORLD TOTAL	7,017,846,922	360,985,492	2,405,518,376	34.3 %	566.4 %	100.0 %			

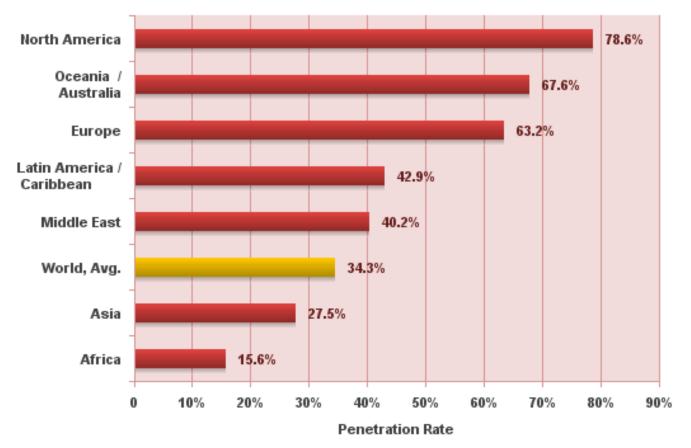
NOTES: (1) Internet Usage and World Population Statistics are for June 30, 2012. (2) CLICK on each world region name for detailed regional usage information. (3) Demographic (Population) numbers are based on data from the <u>US Census Bureau</u> and local census agencies. (4) Internet usage information comes from data published by <u>Nielsen Online</u>, by the <u>International</u> <u>Telecommunications Union</u>, by <u>GfK</u>, local ICT Regulators and other reliable sources. (5) For definitions, disclaimers, navigation help and methodology, please refer to the <u>Site Surfing Guide</u>. (6) Information in this site may be cited, giving the due credit to <u>www.internetworldstats.com</u>. Copyright © 2001 - 2013, Miniwatts Marketing Group. All rights reserved worldwide.





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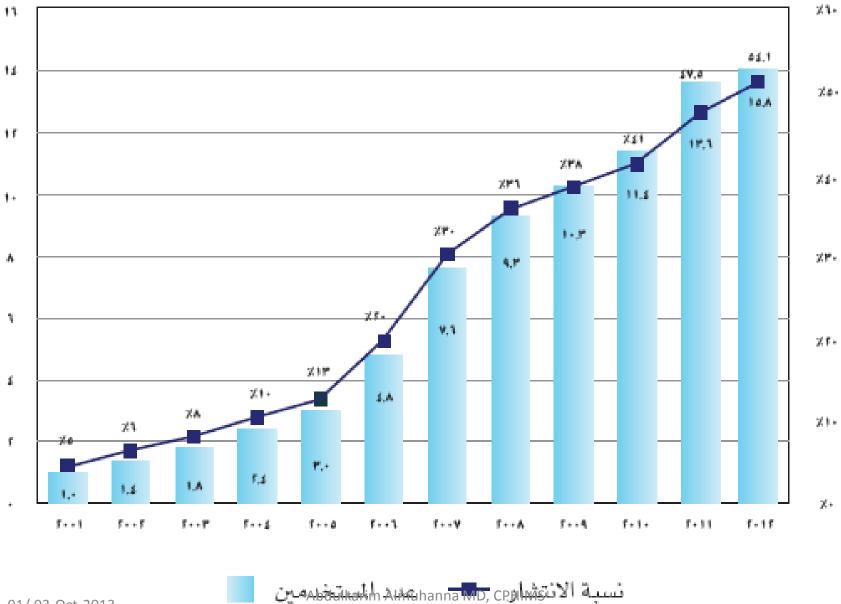
#### World Internet Penetration Rates by Geographic Regions - 2012 Q2



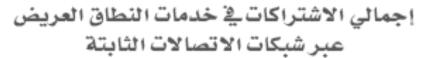
Source: Internet World Stats - www.internetworldststs.com/stats.htm Penetration Rates are based on a world population of 7,017,846,922 and 2,405,518,376 estimated Internet users on June 30, 2012. Copyright © 2012, Miniwatts Marketing Group Abdulkarim Almuhanna MD, CPHIMS -01/ 03-Oct-2013 KFSHRC . Riyadh

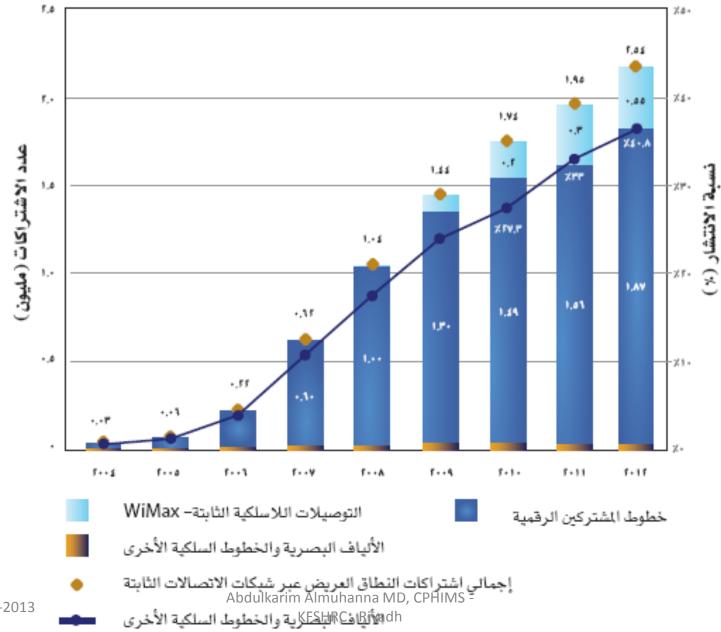
هيئة التصالات وتقنية المعلومات **Communications and Information Technology Commission** 

Abdulkarim Almuhanna MD, CPHIMS -KFSHRC . Riyadh إجمالي عدد مستخدمي الإنترنت

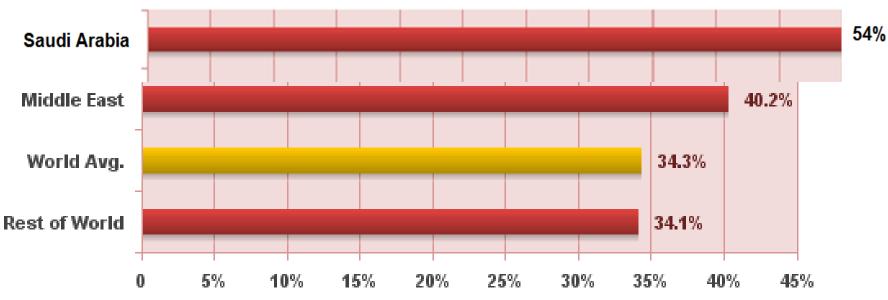


01/03-Oct-2013





01/03-Oct-2013



Internet Penetration in the Middle East

Penetration Rate (% Population)

Source: Internet World Stats - www.internetworldstats.com/stats5.htm 2,405,510,036 world Internet users estimated for 2012 Q2 Copyright © 2012, Miniwatts Marketing Group



- Technology literacy / Access
- Information Quality Poorly regulated
- Arabic Medical Terminology no Standards

# Information literacy

- Not Up-To-Date info
- Patient Safety General Info
- Privacy and Confidentiality
- Liability and accountability

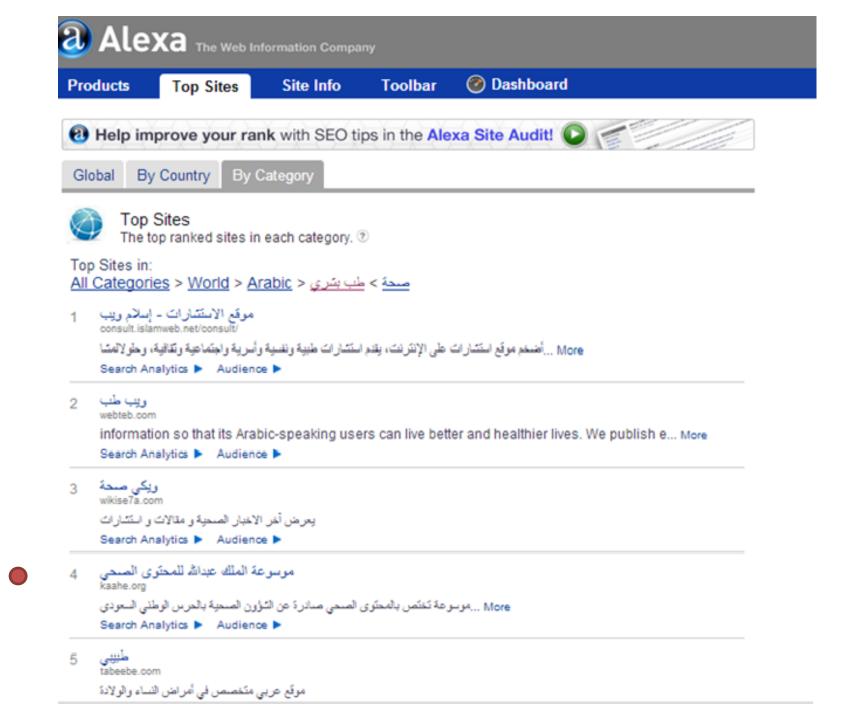
#### Is a Health Web Site

- · C urrent and frequently updated
- R eferences cited
- E xplicit purpose and intentions of the site
- D isclosure of developers and sponsors
- I nterests disclosed and not influencing objectivity (e.g. financial interests)
- B alanced content, list advantages and disadvantages
- L abeled with metadata
- E vidence-level indicated

Eysenbach G: Infodemiology: The epidemiology of (mis)information. Am J Med 2002 Dec 15;113(9):763-5

Abdulkarim Almuhanna MD, CPHIMS -





6	طب الإطفال childclinic.net
	Search Analytics  Audience
7	مختبرات العرب
	arabslab.com
	More موقع متخصص في المختبرات و التحاليل الطبية بفروعها المتنوعة والمتخصصة , يهتم بالجانب العلمي و ال
	Search Analytics 🕨 Audience 🕨
8	موقع وراثة werathah.com
	Moreيبحث في علم الوراثة والأمراض المتعلقة بها, المتلازمات الورائية, التخطيط للحمل و امراض التمثيل ا
	Search Analytics  Audience
9	أطباء الجلدية
-	egydermis.com
	Moreموقع عام يقدم معلومات بسيطة عن الامراض الجلدية والتناسلية وطرق التعامل مع مشكلات الجلد في كل ال
	Search Analytics 🕨 Audience 🕨
10	مفس الطب
II MA	mufasser.com
	Mufasser.com gives patients and their families access to Mufasser interactive tutorials, the l
	Search Analytics 🕨 Audience 🕨

#### ← → C □ www.kaahe.org/ar/

× العزيز العربية للمحتوى الصحى 🚯

Start



#### إعدادات التهوية في السيارة قد تقلل من التعرض إلى التلوث

أَسَارِت دراسةً حديثةً إلى أنَّ إعداداتِ التهوية في السيارة لها تأتيرٌ كبير في مستويات التعرُّض إلى التلوُّت بالجُزيئات (الهُباء) في أتناء القيادة. التلوُّتُ بالجُزيئات أو التلوُّتُ الجُزيئيُّ هو الدخان الأسود السخاميّ الذي يِنتَج عن محُرِّكات الديزل، والمحطات التي تعمل بالفحم. قام باجتون من جامعة تسمالي كاليفورنيا بقياس التعرُّض إلى التلوت الجُزيئيَّ اتر أ المزيد





تطبيق الموسوعة الصحية

متوفر لأجهزة آبل وأندرويد

	المواضيع الأكثر شيوعاً
← مرض السكري	← فيروس الكورونا

→ الانفلونزا

← التهاب القولون

♦ ارتفاع ضغط الدم

◄ ألام الظهر و الحمل.

		سکر	



إِنَّ مرض السُّكري هو الداء الذي تكون فيه مستويات سكر الدّم عالية جداً. يأتبي السكر من الأطعمة التبي

نتناولها، أما الأنسولين فهو الهرمون الذي يساعد على دخول السكر إلى الخال الملفل إلى الخارج. ...المزيد الملفل إلى الخارج. ...المزيد السكر إلى الخارج. ...المزيد

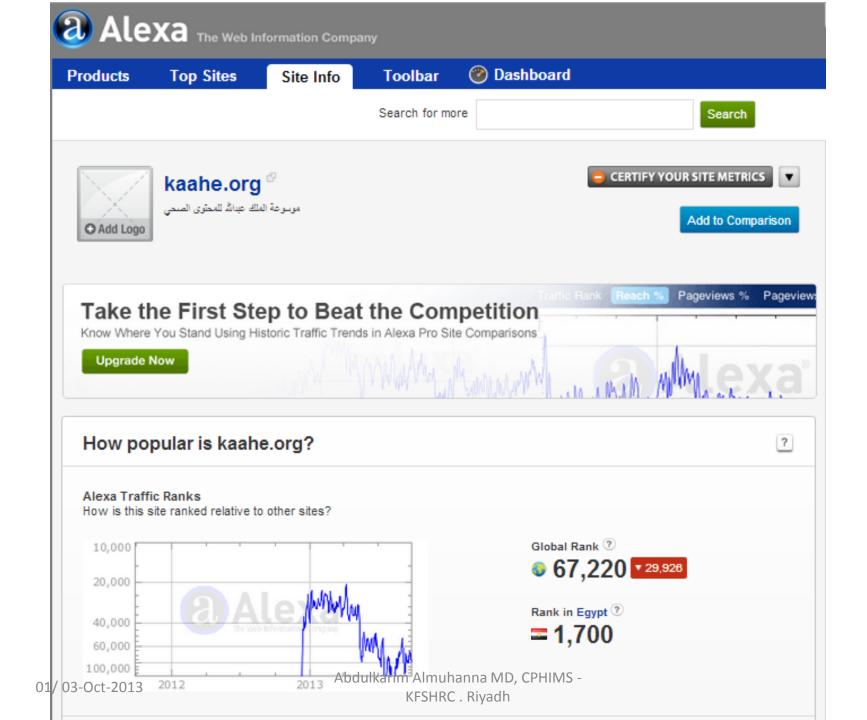
#### صحة المرأة

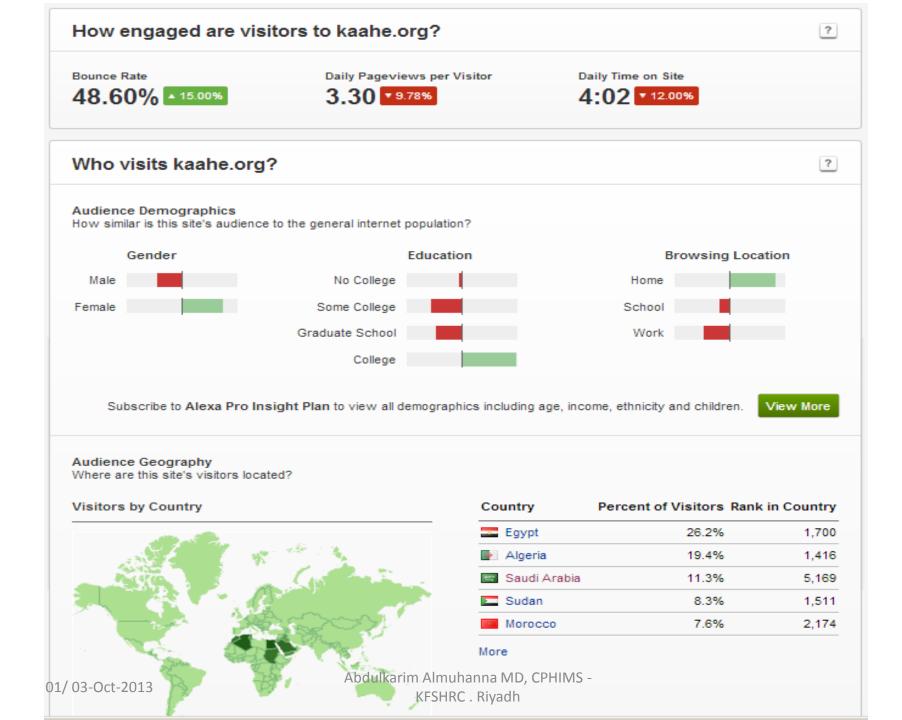


#### الولادة الطبيعية

تدخل المرأة مرحلة المخاض عندما تصبح جاهزةً لوضع مولودها. إن تقلُّصات المَّخاض تدُلُّ على بدئه.

وعندما تأتي هذه تقلّصات كلّ خمس دقائق يكون جسم





#### مختبرات العرب 🎦

#### → C 🗋 arabslab.com



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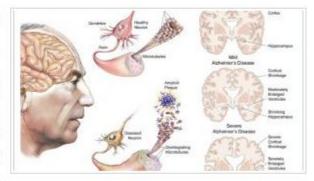
53

#### داء الزهايمر ۳

1 📇 مشاركات الأعضاء 💿 أبريل 5, 2013 🖳

الموضوع منقول من موقع مختبرات دبابو .... نعتذر عن ثقتنا السابقة في المرسل ومن باب حفظ الحقوق فإن الموضوع الأصلي على الرابط -http://dababolabs.com/lab الأصلي على الرابط -tests/disease/A/116 التشخيص يستطيع الأطباء تشخيص 90% من

إقرأ المزيد »



#### دا<mark>ء</mark> الزهايمر ۲

1 💻 مشاركات الأعضاء 🕒 مارس 31, 2013 💄

الموضوع منقول من موقع مختبرات دبابو .... نعتذر عن ثقتنا السابقة في المرسل ومن باب حفظ الحقوق فإن الموضوع الأصلي على الرابط -http://dababolabs.com/lab الأسباب لا يوجد عامل محدد يعزى

إقرأ المزيد »

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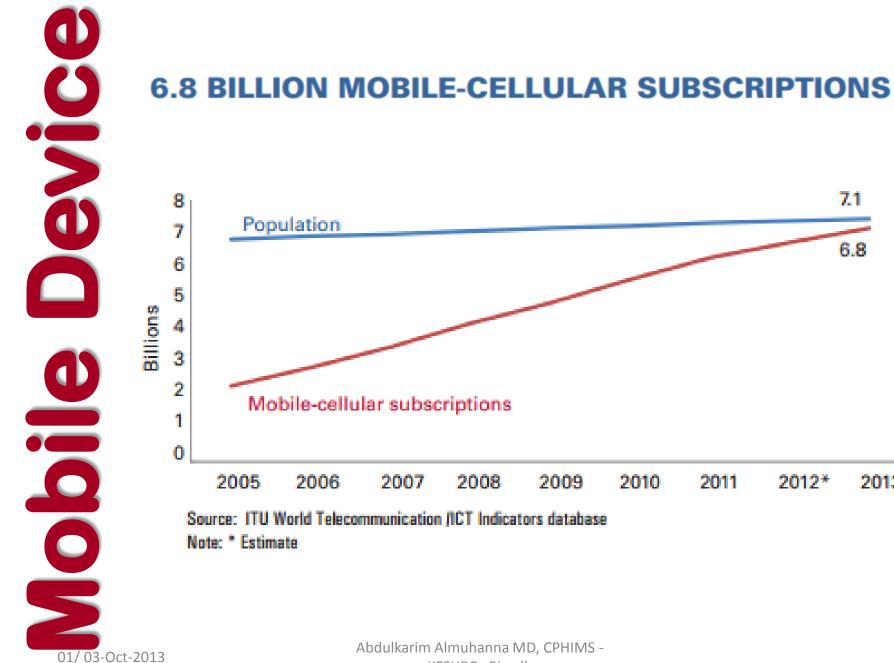
داء الزهايمر ۱

💄 مشاركات الأعضاء 🕒 مارس 22, 2013 💄 2

الموضوع منقول من موقع مختبرات دبابو .... نعتذر عن ثقتنا السابقة في المرسل ومن باب حفظ الحقوق فإن الموضوع الأصلي على الرابط -http://dababolabs.com/lab tests/disease/A/116/ Al**2theimUk/a**rDise4tse داء الزهايمو محمد بي

- tests/disease/A/116/ AlælbeinderærDiseaseuhanna MD/CPHIMS داء الزهايمر 1/ 03-Oct-2013 للويعكا داء الزهايمر هو أشيع أسباب العته RC . Riyadn داء الزهايمر هو أشيع أسباب العته





2008

2009

2010

2011

2012\*

2007

7.1

6.8

2013\*

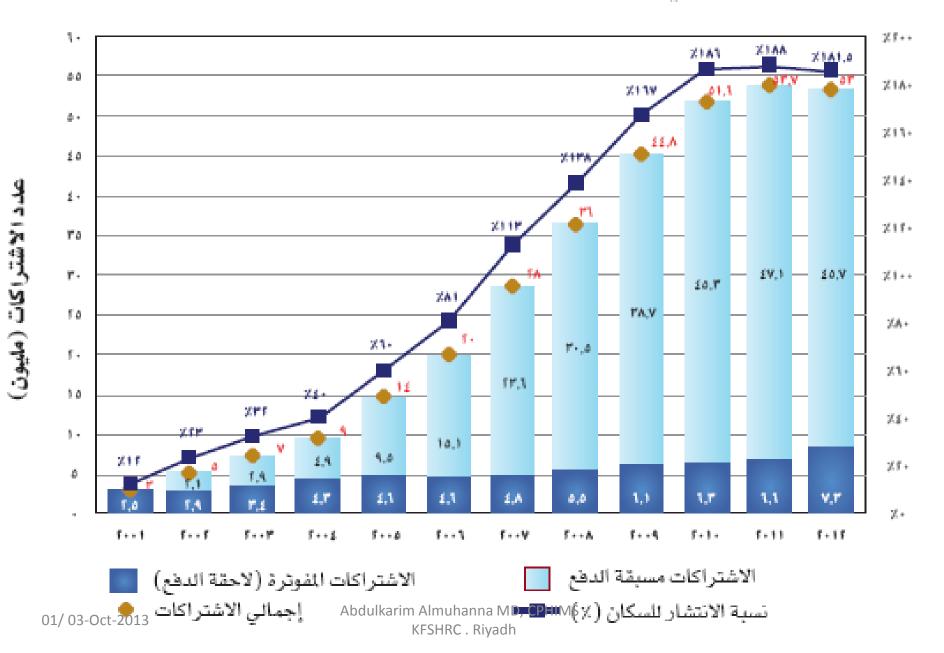
S rating DO 01/03-Oct-2013

Top Smartphone Operating Systems, Shipments, and Market Share, 2013 Q3 (Units in Millions)

	2Q13 Unit	2Q13 Market
Operating System	Shipments	Share
Android	187.4	79.3%
iOS	31.2	13.2%
Windows Phone	8.7	3.7%
BlackBerry OS	6.8	2.9%
Linux	1.8	0.8%
Symbian	0.5	0.2%
Others	N/A	0.0%
Total	236.4	100.0%

Source: IDC Worldwide Mobile Phone Tracker, Aug

Abdulkarim Almuhanna MD, CPHIMS -KFSHRC . Riyadh إجمالي الاشتراكات في خدمات الاتصالات المتنقلة



#### updated: 2013-09-23 23:17:19

Games		154,748 (17.67%)
Education		95,065 (10.86%)
Entertainment		74,353 (8.49%)
Lifestyle		70,253 (8.02%)
Business		60,601 (6.92%)
Books		53,173 (6.07%)
Utilities		50,242 (5.74%)
Travel		45,189 (5.16%)
Music		31,381 (3.58%)
Reference		26,736 (3.05%)
Sports		25,508 (2.91%)
Productivity		24,848 (2.84%)
Healthcare & Fitness		23,701 (2.71%)
News		23,177 (2.65%)
Photography		22,816 (2.61%)
Finance		20,982 (2.40%)
Medical		19,449 (2.22%)
Social Networking		16,487 (1.88%)
Food & Drink		15,860 (1.81%)
Navigation		12,377 (1.41%)
Catalogs		4,825 (0.55%)
Weather 🟅	75,522 Total Apps	3,750 (0.43%)
	· · · ·	1 (0.00%)

1 (0.00%)

Total



KFSHRC . Riyadh

875,522 (100.00%)

#### This table was last updated on September 30, 2013. Android applications

	All appsAverag			Paid appsAver
Books & Reference	60175	4.2		.9638 (33 %)
Business	34092	4.0		1785 (5 %)
Comics	6085	4.1	· · ·	1801 (30 %)
Communication	17576	4.0	1913 (11 %)	
Education	53237	4.2	2581 (5 %)1	.3610 (26 %)
Entertainment	89648	4.0	7293 (8 %)1	.3045 (15 %)
Finance	17339	4.0	1107 (6 %)	1562 (9 %)
Health & Fitness	21988	3.9	1281 (6 %)	4271 (19 %)
Lifestyle	57281	4.0	3555 (6 %)	8923 (16 %)
Media & Video	18166	3.9	1915 (11 %)	2003 (11 %)
Medical	9292	4.0	352 (4 %)	2605 (28 %)
Music & Audio	38607	4.2	2394 (6 %)	3883 (10 %)
News & Magazines	24063	3.9	1352 (6 %)	984 (4 %)
Personalization	89159	4.3	5624 (6 %)2	9167 (33 %)
Photography	10557	4.0	1564 (15 %)	1622 (15 %)
Productivity	21278	4.0	1730 (8 %)	4518 (21 %)
Shopping	12525	3.9	810 (6 %)	521 (4 %)
Social	17498	4.0	1446 (8 %)	1305 (7 %)
Sports	22598	4.1	1002 (4 %)	3720 (16 %)
Tools	55598	4.0	5475 (10 %)	9748 (18 %)
Transportation	9358	3.9		1042 (11 %)
Travel & Local	39295	3.9		.0203 (26 %)
Weather	3471	4.1		489 (14 %)
Libraries & Demo	3458	4.0	· · ·	230 (7 %)
Android games				

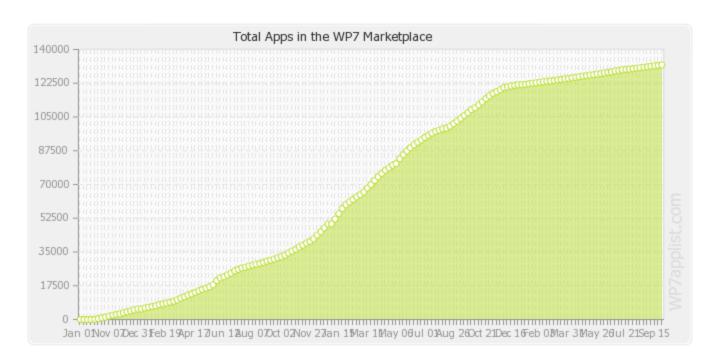
## 857,278 Total Apps

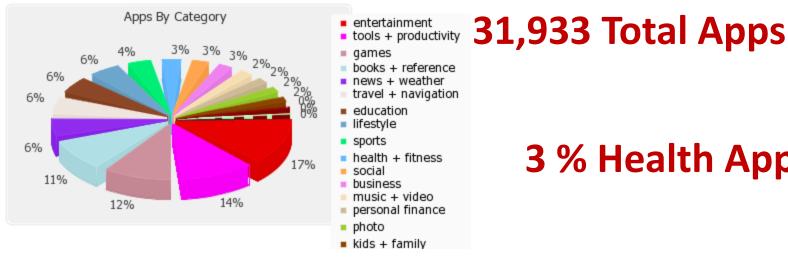
### 21,988 Health Apps

#### Android games

Category name	All appsAvera	age rating <sup>Ap</sup>	downloads	Paid appsAver
Arcade & Action	30142	3.9	5431 (18 %)	5263 (17 %)
Brain & Puzzle	48048	4.1	4828 (10 %)	7306 (15 %)
Cards & Casino	7923	4.0	1443 (18 %)	1487 (19 %)
Casual	30206	3.9	5753 (19 %)	5107 (17 %)
Sports Games	5234	3.9	1173 (22 %)	999 (19 %)
Racing	3533	3.9	1207 (34 %)	442 (13 %)

Current number of Android apps in the market: 857278 Percentage of low quality apps: 23 % Abdulkarim Almuhanna MD, CPHIMS -





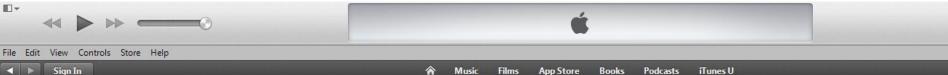
## **3 % Health Apps**

01/03-Oct-2013

Abdulkarim Almuhanna MD, CPHIMS -

ations Ī 01/03-Oct-2013

- Information / Ref Aids iTriage
- Drug Resources
- Decision Aids expert system
- Health Promotion and disease prevention
- Educational Aids Games and simulation
- Management Aids monitoring apps for chronic Diseases
- Tracking and Calculators Apps
- Diet and Nutrition Apps
- Exercise and Fitness Nike Running



Sign In





Weight Loss!

Business

صحتك

Free -

صحتك

Health & Fitness

Free •

Free •





Lifestyle Free •





Free •



**Ab Workouts Free** Health & Fitness Free •



**RunKeeper - GPS** 

Track Running...

Health & Fitness

Free 💌

وزنى

المناسب

وزنى المناسب

Health & Fitness

SR 3.69 \*

Health & Fitness



TanpuraTouch

الاسعافات الاولية

Free -

Health & Fitness

Free •

Music

Free -

Medscape Medscape Medical

Dr. Panda's

Education

Free 💌

الرقية الشرعيه

Free -

Health & Fitness

Hospital - FREE



Makeup Plus

Free •

الفعال

الربجيم الكيمياتي

G Free 💌

Health & Fitness

الفعال 2

Lifestyle

Medical Free •

Medical Free -









Heart Rate Pulse... Health & Fitness SR 7.29 -















StarTeeth

Awesome Eats™

Games

Free -

Health & Fitness



الرجيم المتكامل الرجيم المتكامل Health & Fitness Free 💌

iAugment Medical Free •

الاتك

کل شی

Lifestyle

Free •

عالم الأتكيت - مجانى

Free •

Skyscape Medical

الأسباب

والعلاج

السعنة الأسباب

Free -

والعلاج-نسخة كاملة

Health & Fitness









Kid's Doctor

Free •

Games

Free +



01/03-Oct-2013





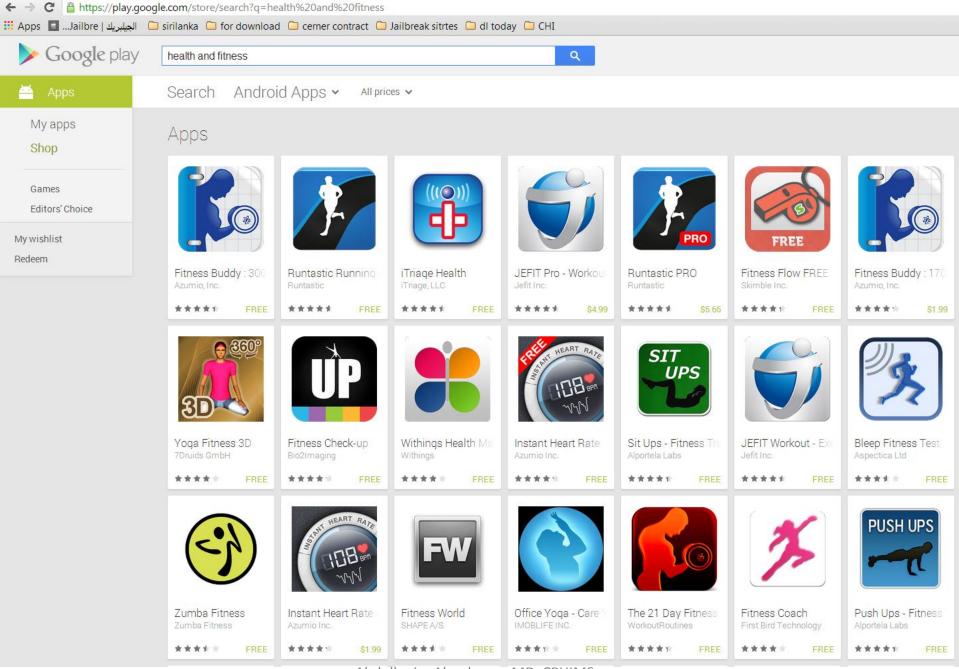




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01/03-Oct-2013

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Windows Phone		Search apps and how-to	Q			
Phones	Features	Apps+Games	News	How-to	Explore My Phone 💌	
	6	-				

Overview Spotlight Apps Games Purchase history

#### Apps

all	Top free   Ne	w+Rising   To	p paid   <mark>B</mark> est rat	ed		
entertainment	_	-				
music + video	No.				XX	
tools + productivity	1 Alexandre		- The second second		ATT	
lifestyle		0.	· Conner		N	
kids + family		CI.			<u> </u>	C1
news + weather	MyFitnessPal	Sleep	How to Lose Belly Fat	Period Tracker	Gym PocketGuide	Stopwatch Timer
travel + navigation	Ratings: 1097	Ratings: 2696	*****	Ratings: 618	****	*****
health + fitness	Free	Free	Ratings: 25	Free	Ratings: 1638 Free	Ratings: 1256 Free
diet + nutrition			Free		Free	Free
fitness						
health					<b>()</b>	
photo				88:88	4	88:88
social						
sports	Relax Melodies	Horoscope	HardFox™	Stopwatch	Runtastic	Timer
personal finance	****	*****	Tabata	****	*****	****
business	Ratings: 1306 Free	Ratings: 1071 Free	★★★★★ Ratings: 74	Ratings: 2216 Free	Ratings: 5931 Free	Ratings: 633 Free
books + reference			Free			
education						
			Manager and Alle			

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6 Week

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MALLAL FILL

Pedometer R. Rivadh

arna MD, CP

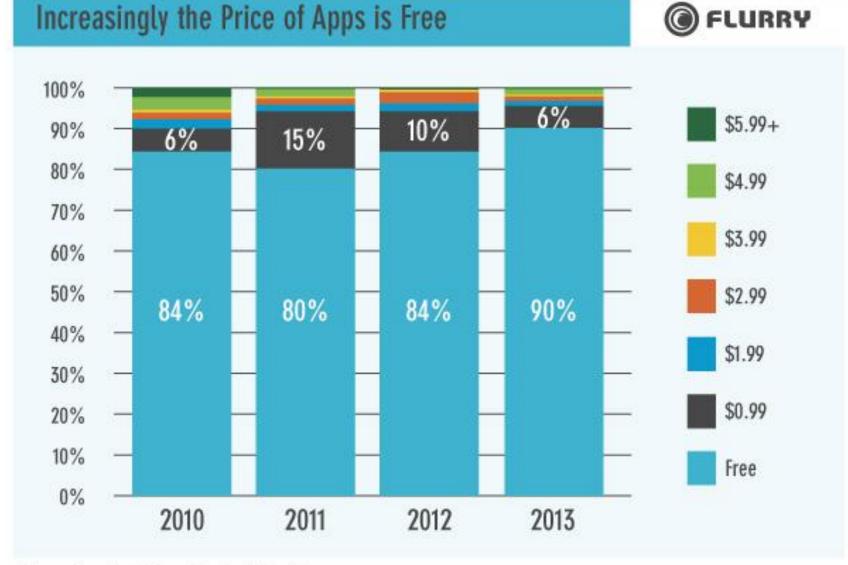
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Calorie

#### 01/03-Oct-2013

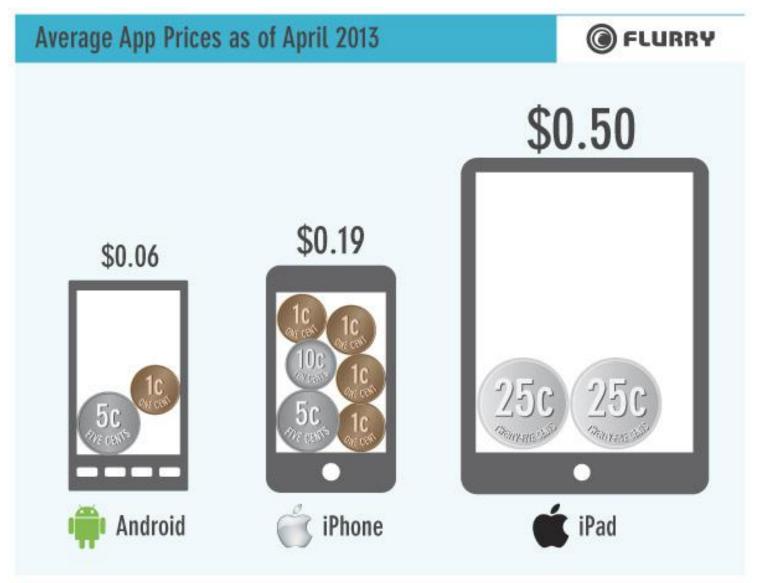
How to Read

Sleep Bug



Source: Flurry Analytics and the Apple App Store.

Data is for iOS apps using Flurry Analytics in April of each year, and is weighted by monthly average users. Abdulkarim Almuhanna MD, CPHIMS -



Source: Flurry Analytics, Google Play, the Apple App Store. Data is for apps using Flurry Analytics in April 2013, and is weighted by monthly average users.

Abdulkarim Almuhanna MD, CPHIMS -KFSHRC . Riyadh •CHI is an emerging field in Health Informatics

- •There are many challenges which need to be addressed
- Health information on the internet
- is not well regulated
- •Quality of Arabic health web sites is questionable
- •Quantity of Arabic health web sites very few

# Thank You

01/03-Oct-2013

Abdulkarim Almuhanna MD, CPHIMS -KFSHRC . Riyadh