Healthcare in numbers:

A brief research into the general developments of healthcare

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Introduction

The term "healthcare" encompasses a wide variety of issues ranging from insurance coverage and workforce compensation trends to prescription drug administration and health information technology. Being able to master all matters of healthcare would likely take an excessive amount of time and research, which is why a select variety of industry topics will be covered in this article. Health care can contribute to a country's economy[5]. In 2014, the health care industry consumed an average of 6 percent of the GDP.

The healthcare sector in Curaçao is a mix of government agencies, state owned companies, public and private foundations and associations. On March 1st, 2004 the New Civil Law Code (Nieuw Burgelijk Wetboek) came into effect. Together with other regulations like the –Ordinance for regulation of health professionals (moratorium), it regulates healthcare good governance. In this article a brief research will be taken regarding the supply side of healthcare. The supply side of healthcare regards the primary, secondary and tertiary care. There is also the zero-line care also known as the preventive care. The supply of healthcare is meant to cover the whole population. Curaçao has a population of over 150,000 since 2011 (Table 1) and all are dependent on the healthcare that the island can provide. For example if the amount of childbearing females in the age group of 15-39 is taken, is the amount of midwives the responsible amount that is needed to cover the demand (Table 2)? It is important to take stock of the health supply that can be offered.

An overview of general healthcare numbers and other aspects will be given for the years 2001, 2010 and 2012 and subsequent years as long as the data are available. There has not been much change over the years regarding the amount of health professionals due to the fixed amount required by law. The data is collected from the VIC ('Volksgezondheid Instituut Curaçao') also known in English as the public healthcare institute. Other data that will be used are from the "Evaluatie van de structuur en de zorgverlening van de eerstelijnsgezondheidszorg op Curaçao" (Evaluation of the structure and healthcare of primary care on Curaçao) report, the labor force survey (LFS) and other data collected by CBS.

[5] The World Bank (http://data.worldbank.org/indicator/SH.XPD.TOTL.ZS)

Table 1: Population of Curaçao			
Inhabitants			
Year	**Total**	**Male**	**Female**
2001	130,822	60,643	70,179
2010	147,122	67,430	79,693
2011	150,284	68,700	81,584
2012	151,378	69,120	82,258
2013	152,798	69,860	82,938
2014	154,846	70,824	84,022
2015	156,971	71,713	85,258

Source: CBS

Table 2: Average Female population in childbearing age 15-39	
	Female population age 15-39
2001	23,283
2010	23,718
2011	11,962
2012	12,503
2013	8,738
2014	11,071
2015	11,385

Source: CBS

Healthcare supply

The way the supply of healthcare is analyzed is through the so called market structures. By analyzing how many primary, secondary and tertiary care professionals there are that supply the health needs (demand) of the population, government can uphold or abandon the moratoriums regarding the needed amount of medical professionals. Does the moratorium come in conflict with the demands, is it lacking or does it meet the demands of the users. There is also the preventive care (zero care); this type of care is offered before health complications present.

Primary care

Primary care is referred to as a patient's main source for regular medical care, ideally providing continuity of health care services. All general practitioners (GPs), dentist, paramedic professionals and pharmacist, practice primary care. The objectives of primary care are to provide the patient with a wide range of preventive and curative care over a period of time and to manage all the care that the patient receives. In 2012 a total of 504 providers of primary care (Table 3) were listed, the totals for the years 2001 and 2010 are not updated with pharmacist information. The most notable increase in primary care is the amount of paramedical professionals. It has increased between the years 2001 and 2010 with 54 percent and between 2010 and 2012 with 9 percent. The amount of general practitioners has also been fluctuating throughout the years. In 2010 it decreased with 22 percent and increased with 12 percent in 2012.

Regarding the density of primary care for every 1000 inhabitants in Curaçao in 2012 there is 0.73 GPs available. It’s a drop compared to 2001 and a slight increase compared to 2010. The lower the ratio the higher amount of population per GP (doctor), thus the higher the ratio the less amount of population

per doctor. One of the highest ranking countries in the Caribbean (and the world) with a high ratio of physicians is Cuba, while the lowest ranking country in the Caribbean is Antigua and Barbuda with a 0.17 ratio. Curaçao was ranking approximately on the 8th place with 0.73 as of 2012 and in 2013 it has dropped to 0.53 (Table 5). Consequently for every 1000 people there 0.53 GPs available, this places Curaçao on the 9th position in the physician's density rank for the Caribbean.

Table 3: Primary care

	2001	2010	2012	2013*
General Practitioners (GPs)	126	98	110	85
Dental professionals	53	52	54	39
Midwives	7	6	6	5
Paramedical professionals	175	269	294	-
Pharmacist	-	-	40	33

Source: Ministry of health, environment & nature of Curaçao (CBS statistical Yearbook)
**Source data for 2013: 'NGE Curaçao 2013 | Themarapport zorg: aanbod, gebruik en uitgave' , authors I. Jansen en S. Verstraeten*

Table 4: Density of primary care/population ratio

	2001	2010	2012	2013
GPs	0.96	0.67	0.73	0.56
Dental professionals	0.41	0.35	0.36	0.26
Midwives*	0.30	0.25	0.48	0.57
Paramedical professionals	1.34	1.83	1.94	-
Pharmacist	-	-	0.26	0.22

Note: (total number per 1000 population)
**Density of midwives is based on the amount of midwives divided by the amount of women in the childbearing age group 15-39*

Table 5: Physician density rank in the Caribbean

	Country	Level*	As Of (year)
1	Cuba	6.72	2010
2	The Bahamas	2.82	2008
3	Barbados	1.81	2005
4	Dominica	1.59	2001
5	Dominican Republic	1.49	2011
6	Trinidad and Tobago	1.18	2007
7	Saint Kitts and Nevis	1.17	2001
8	Grenada	0.66	2006
9	Curaçao**	0.56	2013
10	Saint Vincent and the Grenadines	0.53	2001
11	Saint Lucia	0.47	2002
12	Jamaica	0.41	2008
13	Haiti	0.25	1998
14	Antigua and Barbuda	0.17	1999

Source: https://www.quandl.com/collections/health/physicians-density-per-1000-population-by-country
**all calculations are in units of 1000 people*
*** Curaçao is added to this table for a better impression of the position it is in.*

Two important factors are not measured in these tables: first of all the general health status of citizens of that country, in other words how often do they need to see a doctor. For example, Country "A" has a 500 to 1 ratio but its citizens only need a doctor on an average of once per year. Compare this to country "B" who has a ratio of 300 to 1 but its citizens require a doctor's services, on average, 4 times per year. Second, it does not measure if all citizens of a particular country have equal access to the available doctors.

Practice form of General Practitioner's

Most GPs work either in a solo practice or in conjunction with one other doctor, respectively 39% and 31% (Table 6). A minority of GPs indicated in their practice to cooperate with medical specialists. About 5 % of GPs indicated that they are employed in a different type of practice[6]. Research on the form of practice was done under 80 primary care providers. The practice forms can be a solo, duo, three or more in the same building and GPs in collaboration with a medical specialist (see table 6). Sharing of practice form comes with some benefits which entails profit sharing principles, sharing of financial results and clinical protocols, staff integration. For patients this means a better local GPs' experience of delivering high quality primary care services, better access to consultations, services closer to home and in reassuring settings, a wider range of tailored services and continuity of care, an opportunity to build a more extensive community team involving community nursing, secondary care specialists and social care[7].

Table 6: Type of practice in Curaçao

Practice form	Respondents	
	N=80	%
solo practice	31	38.8
duo practice	25	31.3
3 or more doctors in the same building	13	16.3
Both general practitioners and medical specialists in the same building	7	8.8
Other practice form	4	5

Source: *"Evaluatie van de structuur en de zorgverlening van de eerstelijnsgezondheidszorg op Curaçao"*

Secondary care

Secondary care is medical care provided by a specialist or facility upon referral by a primary care physician that requires more specialized knowledge, skill, or equipment than the primary care physician has. In other words a health professional that generally do not have first contact with patients.

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[6] Snoeijs, S., Boerma W. & Schellevis F., 2012. *"Evaluatie van de structuur en de zorgverlening van de eerstelijnsgezondheidszorg op Curaçao* door "NIVEL, Nederlands Instituut voor onderzoek van de gezondheidszorg.
[7] http://www.bma.org.uk/support-at-work/gp-practices/gp-networks/benefits-to-patients-and-practices

Table 7. Secondary care: amount of specialist registered by their specialization (Curaçao)				
Year	2001	2010	2012	Density of secondary/population (per 1000) ratio for 2012
Anesthesiologist	7	7	7	0.05
Bacteriologist/ Microbiologist	1 / 0	0	1	0.01
Cardiologist	5	6	5	0.03
Child Health Specialist	3	2	2	0.01
Dermatologist	3	2	3	0.02
Ear-,Nose- and Throat Physician	6	5	4	0.03
Gastroenterologist	1	3	3	0.02
Gynecologists - Obstetrician	9	11	10	0.07
Internist	13	12	9	0.06
Medical Officer	4	10	10	0.07
Neurologist	3	3	3	0.02
Neurosurgeon	1	1	1	0.01
Ophthalmologist	8	9	9	0.06
Orthopedist	7	8	6	0.04
Pathologist	3	2	1	0.01
Pediatrician	10	9	7	0.05
Psychiatrist	9	9	9	0.06
Plastic Surgeon	3	2	2	0.01
Pulmonologist	3	4	2	0.01
Radiologist	6	11	11	0.07
Radiotherapist	2	1	1	0.01
Rehabilitation Specialist	1	1	1	0.01
Sport Medicine Doctor	2	2	2	0.01
Social Medicine – Epidemiologist	2	2	2	0.01
Surgeon	11	9	9	0.06
Urologist	3	3	3	0.02
Other	40	14	15	0.10
Total	166	148	138	

Source: Ministry of health, environment & nature of Curaçao

In 2012 there has been about 138 secondary care providers listed (Table 7). This amount is actually in decline, between 2001 and 2010 it dropped with about 11 percent; from 2010 to 2012 it dropped again with roughly 7 percent. Consequently the decrement of the amount of secondary care providers over the years is about 17 percent. The density ratio of specialist over the population of Curaçao is very low. As a consequence of the low density the waiting period for an appointment is long.

The moratorium[8] for medical specialists has been set for a temporary period. This temporary ordinance needs to be updated to the current situation. The temporary moratorium of 2005 was based on a population of about 135,000 people. In 2012 the population has been already surpassing the 150,000 amount consequently placing pressure on the limited resources. This explains the long waiting periods for a consultation with certain specialist.

[8] Tijdelijke landsverordening beperking vestiging beroepsbeoefenaren (PB 2005 no 69)

Tertiary care

Tertiary care is specialized consultative health care, usually for inpatients and on referral from a primary or secondary health professional, in a facility that has personnel and facilities for advanced medical investigation and treatment, such as a tertiary referral hospital.

Tertiary care in general is mostly accompanied by high cost treatment. Prevention remains the most important way to reduce the cost of healthcare. Costs to the healthcare system escalate significantly when operative procedures are performed and subsequent tests are needed. Additionally, a delay in the diagnosis of a condition itself can lead to delayed treatment, thereby eliminating the possibility of timely treatment and thus incurring extra costs. Other factors which play a dominant role in the costs of treatment are the duration of hospital stay. The data for the number of rooms have been fixed for years now.

Table 8. Tertiary care: Intramural facilities by kind and number of beds

	Category	2012	2013
SEHOS (St. Elisabeth Hospital)	General hospital	536	374
Antillean Advent hospital	General hospital	40	40
Kliniek Dr. J. Taams	Surgical clinic	45	45
Dr. D. Capriles Kliniek	Psychiatric hospital	200	200
Stichting Mgr. Verriet Instituut	Rehabilitation	12	12
	Handicapped childcare	112	112
Kraamkliniek Rio Canario	Maternity clinic	17	17
Verpleeghuis Betèsda	Chronic Care Hospital	160	160
Stichting Brasami	Rehabilitation (for drug addiction)	63	60

Source: Ministry of health, environment & nature

Zero-line care

The zero-line care is also known as the preventive care. Zero-line care consists of measures taken for disease prevention, as opposed to disease treatment. Caregivers in the zero-line provide care in clinics and public health services, before people have health complications. Preventive care may include immunizations, vaccines, regular check-ups, routine physicals and colonoscopies. For example newly born who have regular health check-ups to monitor their growth and developments is a form of zero-line care.

The department of 'Geneeskunde en Gezondheidszaken (formerly known as GGD)', the department of medicine & health matters does a good part of the preventive tasks themselves[9] (e.g. in youth

[9] Drs. Frits van Vugt MPA, 12 augustus 2007. *Zorg voor de kosten, een onderzoek naar mogelijkheden tot kostenbeheersing en –reductie in de gezondheidszorg op Curaçao*

healthcare, health care for the elderly and childcare (0-4 years), and also has an important part of the preventive tasks outsourced to non-profit organizations. The main issue here is synchronizing all the different organizations that sometimes do almost the same task. For example the FMA (fundashon pa maneho di adikshon and onkada (ofisina nashonal pa asuntunan di adikshon) all do drug addiction work or prevention. This synchronization will be cost effective, while giving other preventive health issues a chance to receive more attention.

There are organizations who work on the same forefront, that rely on private and public funding to do their work, for example cancer prevention like 'Fundashon Prevenshon' (FP) and there are organizations like the 'Prinses Wilhelmina Fonds Curaçao', a non-profit organization who relies solely on donations to do their work.

Emphasizing on preventive care helps to maintain good overall health. Therefore a good synchronization is of great importance. It will help to maintain the population on a certain level of health, consequently making healthcare costs low. In turn this will be beneficial to everyone.

Healthcare funding

A majority of the healthcare providers are financed by the social insurance institution ('Sociale Verzekeringsbank, SVB') through the Sickness Insurance Act – P.B. 1966 no. 15. The social insurance institution is a public health fund that provides the necessary finances in prevention and public health, to improve health outcomes, and to enhance health care quality. In table 9 a general overview of healthcare providers that the social insurance works with is given. The amounts have practically remained the same throughout 2008-2010. These healthcare providers are mainly sustained by public funding.

Table 9: Healthcare providers working in association with SVB

Category	2008	2009	2010
General Practitioner (GPs)	90	92	93
Specialists	87	89	89
General hospital	3	3	3
Psychiatric hospital	2	2	2
Maternity clinic	1	1	1
Chronic Care Hospital	1	1	1
Laboratory	2	2	2
Home nursing	3	3	3
Kidney dialysis	3	3	3
Chronic Care Hospital	9	9	9
Laboratory	2	2	2
Birth attendants	9	9	9
Physiotherapists	41	44	44
Nutritionist	14	14	15
Drugstores	33	33	33

Source: 'Sociale Verzekeringsbank' report

The medical cost has been fluctuating from 2010 to 2012, in 2011 being the peak year with an overall medical cost of about 205 million guilders (see table 10). Pharmacy and intramural facilities are the highest expense cost for 2011. The right for medical cost and the premium liability of de healthcare

fund has been included in the basic health insurance in 2013, consequently 2013 should be considered as medical cost that nonetheless had to be settled.

Table 10: Healthcare cost under the responsibility of SVB (in millions of Afl.)				
Category	**2010**	**2011**	**2012**	**2013**
General practitioners	14,852	16,943	14,966	1,290
Specialists	-	25,315	22,312	3,799
Laboratory	-	15,197	13,424	1,372
Pharmacy	41,369	52,443	43,457	3,391
Intramural facilities	61,401	68,729	63,401	6,325
Paramedical professionals/Midwives	4,237	4,975	4,246	664
Medical treatment abroad	12,321	17,807	16,229	1,864
Other	35,329	4,118	3632	610
Total medical cost*	169,509	205,527	181,668	19,315

Note: The medical cost are sustained by ZV ('Ziektefonds', the health fund) and by OV ('Ongevallenfonds', accident fund)

Healthcare quality

The Government has three responsibilities in order to uphold healthcare quality. It has to formulate the healthcare policy, make legislation and do inspections. As a result from the dissolution of the former Netherlands Antilles in 2010, Curaçao has been working on establishing the necessary policies and legal framework to support the reorganization of the Ministry of Health, the national health insurance system, and the financial system, as well as embarked on the necessary structural and functional changes in healthcare, public health services, and other public related services. *(See list of ordinances regarding healthcare on www.svb.org)*

Regarding inspection the Public Inspectorate of Curaçao, one of the main Ordinance it has is the BIG law ('Wet op de beroepen in de individuele gezondheidszorg' = The professions act in individual healthcare). The BIG law, its main purpose is to do an inquiry on physicians every five years for quality requirements. If a physician does not comply, he or she loses his or her BIG registration. The requirements are that a physician should have the appropriate specialization, must be active in his or her profession and follow retraining. The public inspectorate has also other quality inspections on healthcare providers like the intramural institutions, policlinics and residential healthcare providers.

Conclusion

In view of all the above, the overall healthcare supply is limited for the population size that we have regarding general practitioners and specialist. In health care in general the scarce resources are at the forefront. In the primary care as well as the secondary care the amount of employment does not comply with the healthcare need of the population and the population growth. Mass awareness regarding health can contribute to less medical assistance. Health care as a whole is a costly undertaking, by implementing government policies in the different cares it could help determine the cost or need. The more investment in zero-line care can contribute to less need for primary, secondary care and even tertiary care. It's all about managing the scarce resources that a country possesses. An optimal functioning health care system is beneficial to all users.

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