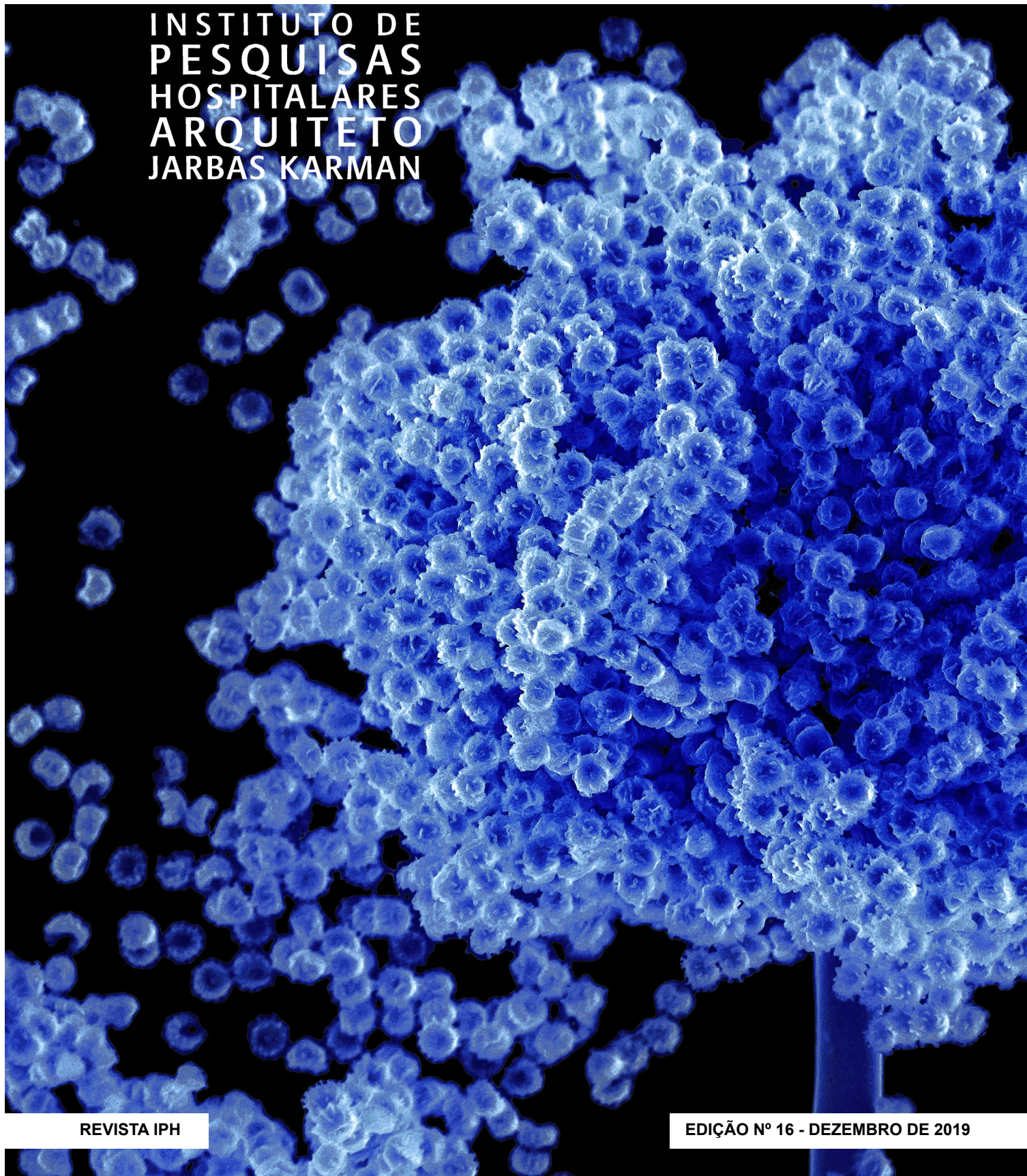


REVISTA | MAGAZINE

IPH

16

INSTITUTO DE
PESQUISAS
HOSPITALARES
ARQUITETO
JARBAS KARMAN



Revista IPH

Edição Nº16

Dezembro de 2019

Conselho Editorial

Fabio Bitencourt

Jorgeny Catarina Gonçalves

Marilena Pacios

Ricardo Karman *diretoria@iph.org.br*

Editor

Ana Beatriz Bueno Ferraz Costa *revista@iph.org.br*

Expediente IPH

Erick Vicente *erick@iph.org.br*

Rita Moraes *secretaria@iph.org.br*

Paulo Mauro Mayer de Aquino *paulomauro@iph.org.br*

Projeto Gráfico

Erick Vicente

Imagem da capa

Fungo *Aspergillus*

ISSN 2358-3630

Endereço para correspondência

IPH - Instituto de Pesquisas Hospitalares Arquiteto Jarbas Karman

Rua Vargem do Cedro, nº74 , Sumaré

São Paulo - SP

CEP 01252-050

Tel.: (11) 3868-4830

E-mail: *revista@iph.org.br*

Endereço eletrônico: *www.iph.org.br/revista*

ENGLISH

VERSION



Summary

Editorial	69
Research synthesis	
Health financing systems worldwide	70
Claudia Kodja	
Article	
Risk of infections caused by the presence of the fungus <i>Aspergillus.sp</i>: remodeling hospitals and climatization systems	78
Watson Freire Dias	
Article	
A pathway for death: the flow and connections between environments and its occupants	85
Cris Vieira	
Case study	
An analysis of the sectorization and comfort in contemporary children's hospitals	92
João Pedro Sartorato Nozela, Andrea Leitner, Silvia Mikam	
Case study	
"Casinha": The story of the Birth Center in Rio de Janeiro that became a model for humanized labor and resistance to the hardships of public management	105
Cristiane Neves da Silva	

Editorial

We are glad to publish the 16th issue of IPH Magazine, a technical and scientific journal whose goal is to disseminate and promote knowledge within the fields of architecture, engineering and management regarding healthcare constructions.

It is due to the effort and generosity of professors, researchers and professionals that IPH Magazine has been growing as a reference to those willing to have access to the most updated works concerning the hospital care industry.

This issue comprises recent researches with respect to the hospital care industry, many involving architecture. The text "An analysis of the sectorization and comfort in contemporary children's hospitals" investigates the sectorization of flows and comfort of two children's hospital, offering solutions and alternatives to meet the needs of users. The article "A pathway for death: the flow and connections between environments and its occupants" carries out a bibliography verification about death and points to the need for more research. The case study "'Casinha': The story of the Birth Center in Rio de Janeiro that became a model for humanized labor and resistance to the hardships of public management" discusses the influence of sensitive features in the ambience over how users perceive healthcare spaces.

The importance of preserving the quality of the air, mainly inside ICUs, is presented in "Risk of Infections caused by the presence of the fungus *Aspergillus*.sp: remodeling hospitals and climatization systems". Using reports from microbiological tests of the air inside the ICU of a high-complexity public hospital, the text discusses the presence of microorganisms that pose a threat to human health, especially the *Aspergillus* fungus, which is associated with construction sites and air treatment systems.

Finally, the research "Health Financing Systems Worldwide" analyzes global affairs apropos of the budgetary maintenance of health systems, regardless of local differences or adopted policies. An urgent matter not only for managers but for everyone involved in this industry.

For the 2019 issue, we would like to thank the authors, who have submitted their work to the public scrutiny, and above all the peer reviewers, who so patiently appraised the texts, suggesting corrections and adjustments.

We restate that IPH Magazine is an open space for dialogue and we await everyone's contribution. Enjoy your reading.

Health Financing Systems Worldwide

Author:
Claudia Kodja

ABSTRACT

This article analyzes the global issue of how to maintain the funding of healthcare systems, regardless of their local differences or policies. This work considers the perspective of the continuously increase in costs to maintain the funding of health financing systems due to changing structures; reveals the inappropriate distribution of financial resources employed in the area; and considers the possibility of a mixed structure of funding that combine public and private relationships.

KEYWORDS

Health System; Health Financing Systems; Universal Health System; Universal Health Coverage

Health Financing Systems Worldwide

Besides the current difficulties, health financing systems around the world will have to deal with new challenges concerning the rise in life expectancy, the increase of non-communicable diseases and the use of new technologies.

Life expectancy

The average life expectancy has increased worldwide, from 57 years old, in 1967, to 72 years old, in 2017. A 26% variation or an increase of 15 years in lifespan.

An analysis of the increase in life expectancy Variation between gender and income

	Low-income	Middle-income	High-income	1967	2017
Life expectancy (Men - 2017) Lifespan at birth	61,5	69,5	78	55	70
Life expectancy (Women - 2017) Lifespan at birth	65,2	73,7	83,3	59	74
Life expectancy (Overall - 2017) Lifespan at birth	63,3	71,5	80,6	57	72

Credit: Claudia Kodja - Database: World Bank - <https://data.worldbank.org/indicator>

The most significant increase was seen in the low-income group, where life expectancy skyrocketed from 42,6 to 63,3 years old in that period. The group comprises about 733 million people, who still rely only on a negligible amount of the financing resources aimed at healthcare.

Non-communicable Diseases

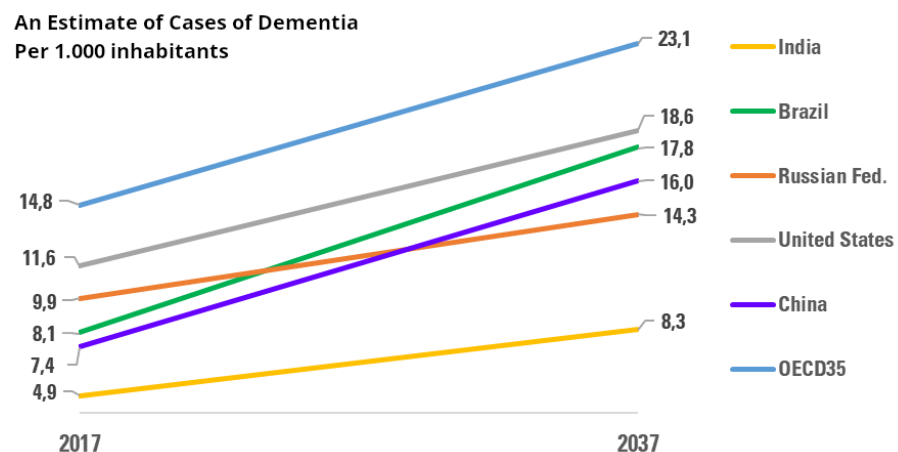
The number of non-communicable diseases (NCD) have significantly increased over the last past years, and the reasons for that could either be the rise in life expectancy or change of habits.

In 1990, NCDs were responsible for 43% of all deaths and, in 2017, they killed 41 million people, representing 71% of all deaths around the world. Cardiovascular diseases were responsible for most deaths, killing 17,9 million people per year, followed by cancer (9 million), respiratory diseases (3,9 million) and diabetes (1,6 million).

A recent analysis carried out by the World Economic Forum shows that Brazil, China, India and Russia annually lose more than 20 million people from their workforce to NCDs.

Another relevant variation, which impacts the structure of cost and services, concerns an estimate growth in dementia cases.

There are about 50 million people worldwide suffering from dementia, and almost 60% of them live in low or middle-income countries. Every year there are about 10 million new cases.



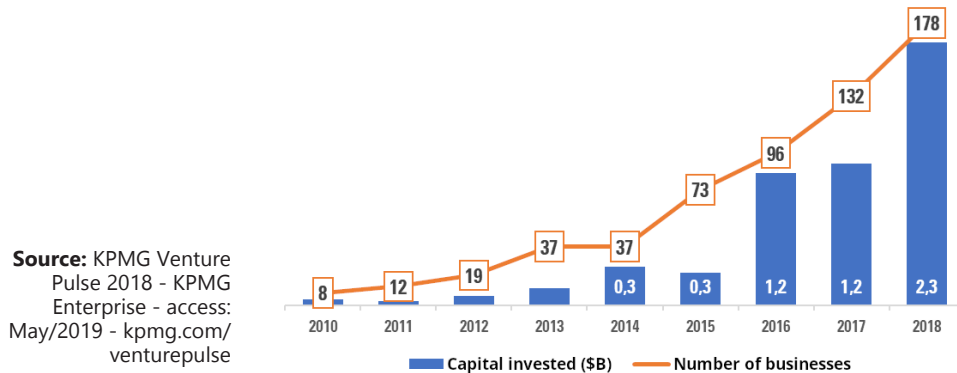
Credit: Claudia Kodja
- Database: OECD. Stat -
Better Life Index - [https://
stats.oecd.org/](https://stats.oecd.org/)

Technology

Amid our current technological revolution, biotechnology and healthcare are drawing great part of the entrepreneurial venture capital to support and accelerate companies, aiming at fast growth.

Artificial intelligence, process automation and virtual reality are the medical fields that most draw entrepreneurial capital. Artificial intelligence developments for the medical area has led to the establishment of an astonishing number of startups.

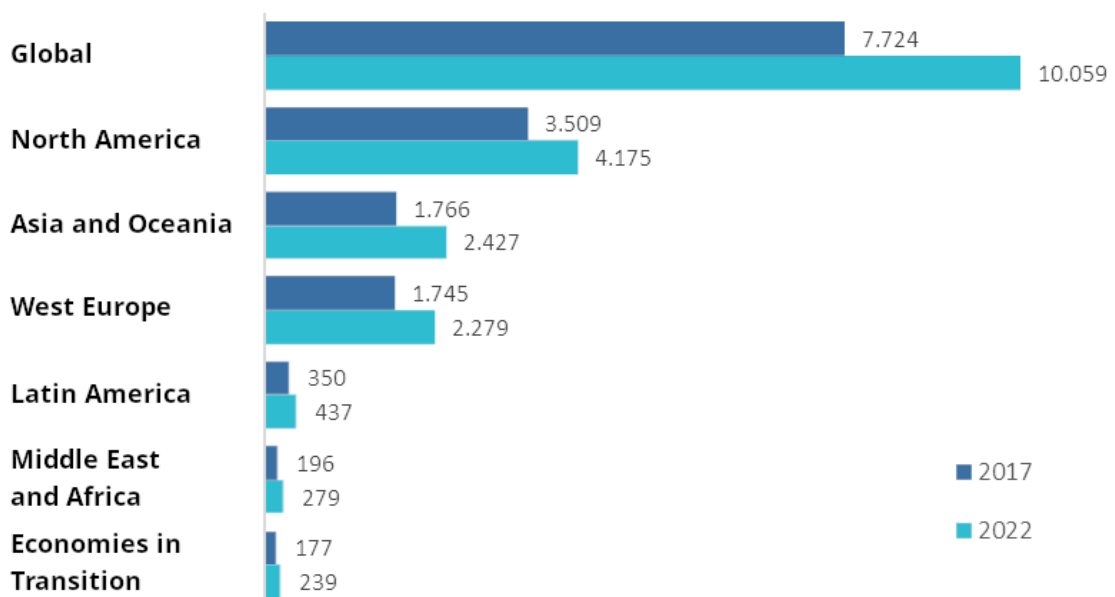
Global Venture Capital Invested and Artificial Intelligence in Healthcare



Health expenditure is growing faster than the GDP worldwide. In low and middle-income countries, annual costs have reached 6%, in high-income nations, 4%. The reasons for that can be both the structural changes necessary to comply with the increase of life expectancy, non-communicable diseases and new technologies; and the way the area itself is operating.

Spending on health may reach US\$ 10.059 trillion until 2022.

Increase in Health Expenditure - 2017 to 2022 - US\$ trillion



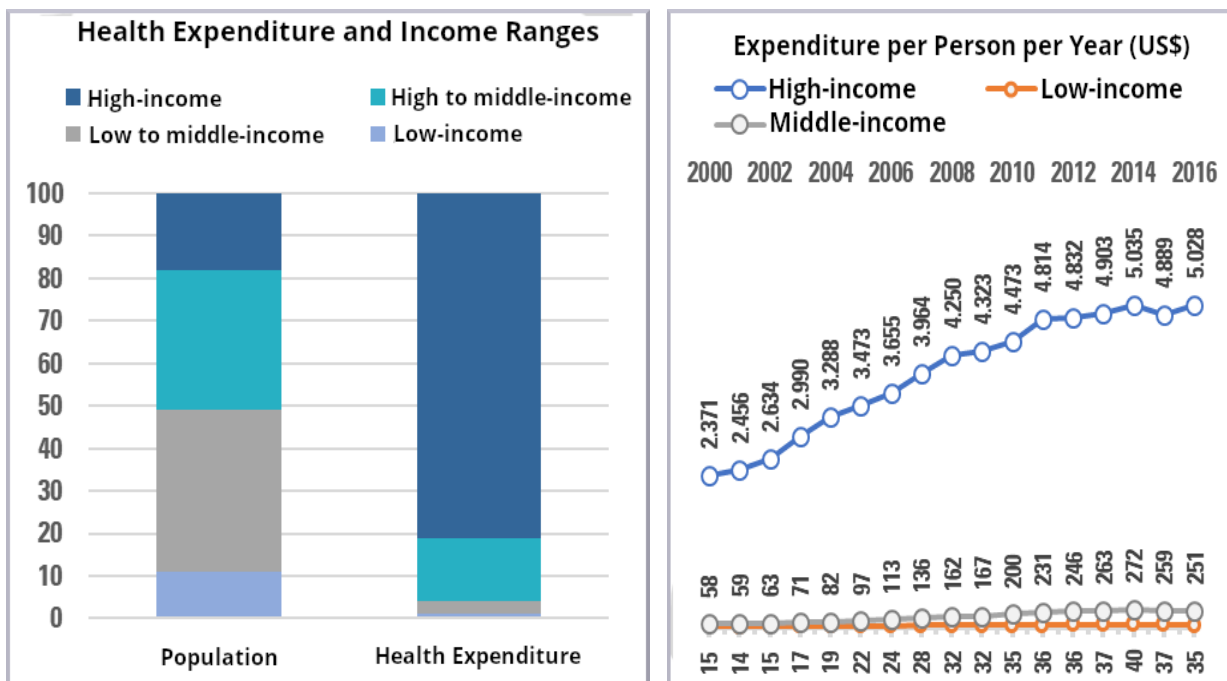
Source: 2019 Global Healthcare outlook - Deloitte Center of Healthcare Solutions

A variation of 30,2% in 5 years, roughly US\$ 2.335 trillion Inequality and Inefficiency in Allocating Health Resources

Although 80% of the world population live in low or middle-income countries, this group represents less than 20% of the total spending on health.

Such inequality is not showing signs of change and there is no guarantee new technologies will reduce the costs or ever become accessible to the low-income population.

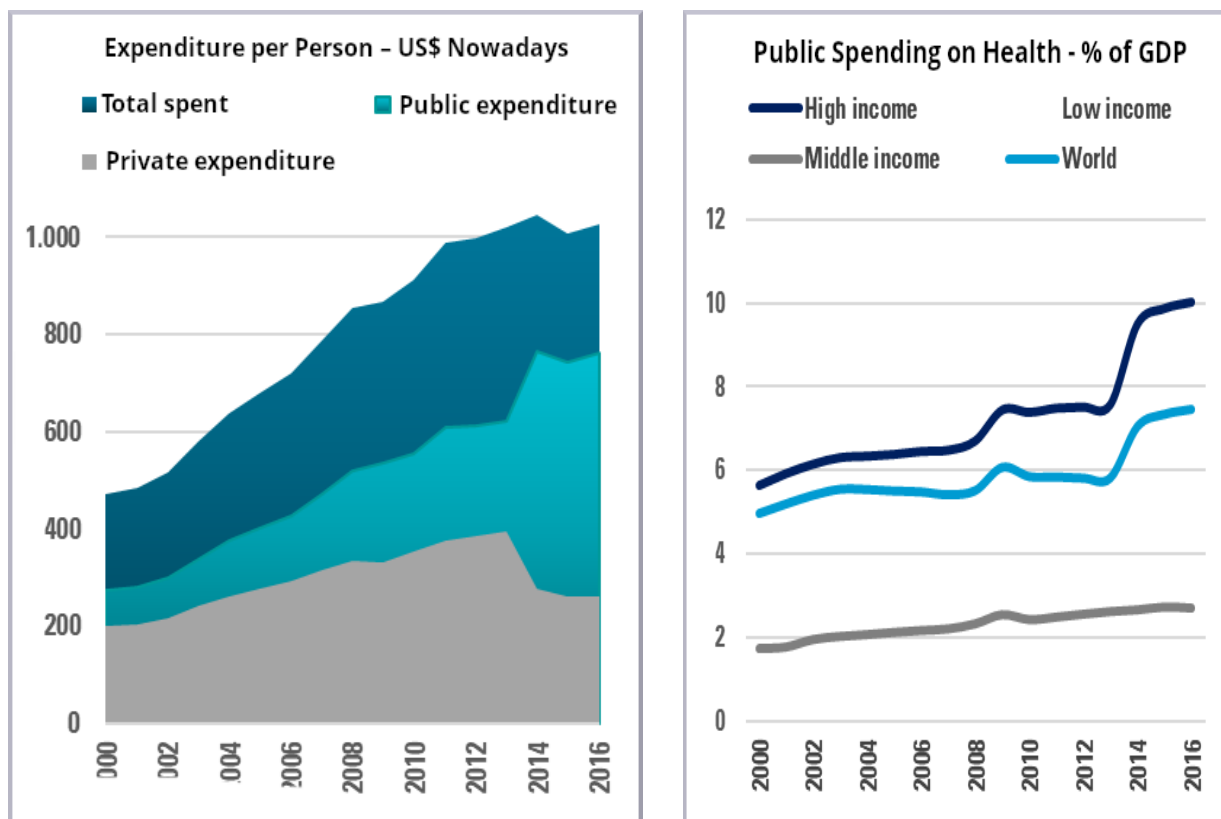
The next pair of tables is quite elucidative to dimension what it means inequality in the contemporary economy.



Credit: Claudia Kodja - Database: World Bank <https://data.worldbank.org/indicator>.

Such analysis of the amount of public and private resources invested in healthcare reinforces not just the inequality, but also the fiscal inefficiency and lack of prioritization of public health among the most vulnerable groups.

Globally, public spending on healthcare has seen a real growth of 2% thanks to the increase in investments from high-income countries. In low-income countries, public health spending has withdrawn 11% between 2006 and 2016.



Credit: Claudia Kodja - Database: World Bank - <https://data.worldbank.org/indicator>.

Between the Universal Health System and the Universal Health Coverage - Or Neither

The international debate concerning health financing structures bring face to face the universal system and the universal coverage. Both alternatives differ on the level of government responsibility in developing and providing healthcare.

The Universal System reflects a welfarism attitude while considering health a right every citizen must be entitle to and ensures free and global access for the society as a whole.

Universal Coverage adopts a liberal viewpoint, limiting the government role as a regulator of the health system, one that must delegate to the market the investment, maintenance and distribution of healthcare services.

Such difference could be classified as political if the access to and quality of healthcare services were not related to practical issues, such as, territory coverage, social equity and availability of resources.

Universal Health System & Universal Health Coverage Characteristics and Differences

	Universal System	Universal Coverage
1. Government	Must finance, manage and offer healthcare services.	Its role is restricted to regulating the health system. The responsibility of who finances and offers the service is divided.
2. Financing	Public financing, via fiscal income.	Public and private funds put together.
3. Access	Global assistance and equal access to ensure citizenship. Access is granted regardless of having means to pay for it.	Subsidies to the acquisition of health insurances and service packages (public or private), aimed at the poorest. Access depends on income and social inclusion.
4. Efficiency	Lower operational and administrative costs. It aims at economies of scale and offer regulation.	Higher operational and administrative costs. Higher total health expenditure.
5. Services	Services in networks, territory coverage, integration between individual care and public health actions. Health promotion, prevention and care.	No territory coverage, focused on individual and biomedical services.

Table 1: Universal health system and universal health coverage: assumptions and strategies
- Escola Nacional de Saúde Pública, Fiocruz.

Universal health system and universal health coverage: assumptions and strategies – National School of Public Health, Fiocruz.

Although the Universal Health System seems more equitable and desirable, it converges towards precariousness and even welfarism since it becomes unfeasible to offer that level of investment, reach and quality for all using public resources.

On the other end there is the Universal Health Coverage that, although being based on the organization and efficiency of the private system, tends to mercantilism and may worsen the inequalities, since it focuses on having financial returns from all its initiatives.

Since every polarization is flawed, to move forward with the necessary developments for the health systems and reach the highest level of equity in the distribution of health financial resources, we need well-planned structures that bring together several sources and types of investment.

In the face of complexities caused by modern times and inequalities amassed throughout the years, the international guidance proposes mixed solutions designed among governments and the private initiative.

They rise from the relationships built up beforehand between public and private initiative, since they do not relate the sources of the capital, but attribute different responsibilities to them.

Updating the healthcare service mechanism benefits from a variety of resources, keeping the public and free system addressed exclusively to low and middle-income groups of people, leaving to the market the responsibility to make available subsidized health insurance plans and to create health insurances.

It is worth mentioning that developing a public healthcare service exclusive to the low and middle-income population should not be mistaken with low quality, quite the contrary, the initiative aims at gathering the resources to those who cannot have access to the market.

This process requires time, market structuring and a construction structured in stages.

1st STRUCTURE	2nd STRUCTURE	3rd STRUCTURE
Non-contributive	Occupational	Complementary and Personal
Financed by national, state, and/or local governments. Financed by employers and employees within the labor market. Financed by participants.	Financed by employers and employees within the labor market.	Financed by participants.
It offers everyone a minimum level of protection.	It is established by class negotiation between employers and employees.	Voluntary participation.
It ensures low-income people basic health coverage regardless of their contribution or participation in the economy.	It is based on fixed and mandatory percentages of contribution. Changing Occupational Health Insurances is guaranteed in case of change of work.	Managed by life insurance companies and banks.
Additional services might be covered by Public Health Insurances where maximum contribution is adjusted according to income.	Employers contribute with two thirds, and employees with one third to the Occupational Health System. There might be fiscal benefits.	Fiscal benefits apply.

Credit: Claudia Kodja.

Regardless of how we understand citizenship and social rights, the solutions to guarantee financing and access to social services nowadays require a structuring process between public and private sectors. Precariousness and inequality tend to worsen if we cannot see it through.

References

Health at a Glance 2017 - OECD Indicators - access: May/2019 - https://doi.org/10.1787/health_glance-2017-en

KPMG Venture Pulse 2018 - KPMG Enterprise - access: May/2019 - [kpmg.com/venturepulse](https://www.kpmg.com/venturepulse)

NCD Slow Motion Disaster - World Healthcare Organization - access: May/2019 - www.who.int/publications/10-year-review/en/

Trends in Healthcare Exits 2018 - Silicon Valley Bank - Authors: Jonathan Norris | Ritish Patnaik

OECD (2017), "Dementia prevalence", in Health at a Glance 2017: OECD Indicators, OECD Publishing - Paris -DOI: https://doi.org/10.1787/health_glance-2017-76-en

World Bank Indicators - <https://data.worldbank.org/indicator>

Global Health Expenditure Database - <https://apps.who.int/nha/database>

The Rising Cost of Health Care by Year and Its Causes - See for Yourself If Obamacare Increased Health Care Costs - <https://www.thebalance.com/causes-of-rising-healthcare-costs-4064878>

Public Spending on Health: A Closer Look at Global Trends - World Healthcare Organization - <https://apps.who.int/iris/bitstream/handle/10665/276728/WHO-HIS-HGF-HF-WorkingPaper-18.3-eng.pdf?ua=1>

Universal health system and universal health coverage: assumptions and strategies - ISSN 1413-8123 On-line version ISSN 1678-4561. Escola Nacional de Saúde Pública, Fiocruz - giovanel@ensp.fiocruz.br.

Spending targets for health: no magic number - World Healthcare Organization - <https://apps.who.int/iris/bitstream/handle/10665/250048/WHO-HIS-HGF-HFWorkingPaper-16.1-eng.pdf?sequence=1>

About the author

Claudia Kodja

Claudia Kodja graduated from Fundação Getulio Vargas (FGV-SP) and has a PhD in Economic History from Universidade de São Paulo (USP). She wrote the book "Mundo em Crise: a Libertação e o Abandono da Sociedade" (Almedina 2012) and is a certified asset manager by the Brazilian Securities and Exchange Commission (Instrução CVM - nº 306).

www.kodja.com.br

contato@kodja.com.br

Risk of Infections caused by the presence of the fungus *Aspergillus.sp*: remodeling hospitals and climatization systems

Author:
Watson Freire Dias

ABSTRACT

By analyzing reports of microbiological tests of the air carried out in the ICU of a high-complexity public hospital in São Paulo, this article aims at determining the real presence of microorganisms that offer risks to human health, especially the *Aspergillus* fungus, which is directly associated with construction sites and air conditioning systems. After carrying out a bibliography verification and documentation analysis, the findings endorse the importance of having air with satisfactory quality inside hospitals.

KEYWORDS

Air treatment; *Aspergillus*; Air conditioning; Nosocomial infection; ICU

1. Introduction

The fundamental principles that guided us to conceive this article were the risks that environments being remodeled and air conditioning equipment may pose to inpatients, especially those in intensive care units (ICU). Based on the literature and publications, our focus was to determine the risks posed by microorganisms present in areas where civil works are carried out and if when associated with a precarious climatization system it could lead to a potential harmful effect to health promotion. Moreover, we present and analyze the reports of microbiological assessments carried out in the ICU of a high-complexity hospital in São Paulo.

2. Treatment and indoor air quality at healthcare facilities as an element of healing

In healthcare facilities, especially hospitals, air conditioning projects must consider every circumstance of the environment and investigate all the demands for each location, and not just the thermal comfort. Air conditioning systems can be an important source of microorganisms. Substantial volumes of physical, chemical and biological pollutants affect workers and inpatients, especially those with depressed immune systems (COSTA, 2007, p. 4).

Environments with low air exchange rates cause a quantitative increase in clusters of airborne chemical and biological pollutants, which therefore harms the health of the population. For that reason, indoor air quality (IAQ) has become a paramount object of research in the area of public health (TURIEL et al., 1983 apud BRICKUS; AQUINO NETO, 1999). We should extra

careful with air conditioning systems, seeing that the chances of having undesirable contaminant microorganisms carried in suspension decreases if the air is cleaner. Such risk increases proportionally regarding the rates of airborne particulates (BICALHO, 2010).

The concern regarding air quality, as well as its concept, is applied to every area under climatization, without exception. However, Quadros (2008) highlights the quality of the air in healthcare facilities represents a more critical issue, since it can have a direct impact over the speed of patient recovery, as well as over the prevention of nosocomial infections. Related studies are even more important when considering the treatment units for cancer and immunosuppressive diseases, which affect patients' immune systems (QUADROS, 2008).

Nowadays, most patients with access to medical care gets better. Nonetheless, there is a part of the population that suffers the unintentional consequences of healthcare, such as the infections related to health assistance (SINGH; BRENNAN; BELL, 2008).

If we consider all hospital environments, the ICU is one of the most conducive to give rise to infections and bacterial resistance, since patients are more exposed to hazardous procedures and the peculiar conditions of these units. The contamination caused by microorganisms present in the hospital environment benefits from the susceptible condition of the patient, considering the therapeutic and diagnostic approaches that can impair the mechanical barriers of the skin and mucosae (BARBOSA, 2010 apud MORAES; RAU, 2011).

The airborne spread of fungal spores through hospital ventilation systems and clothes contaminated by air disruption are among the most frequent fungal infections. They are highly accountable for morbidity and mortality among immunocompromised patients (FRARE, 2009).

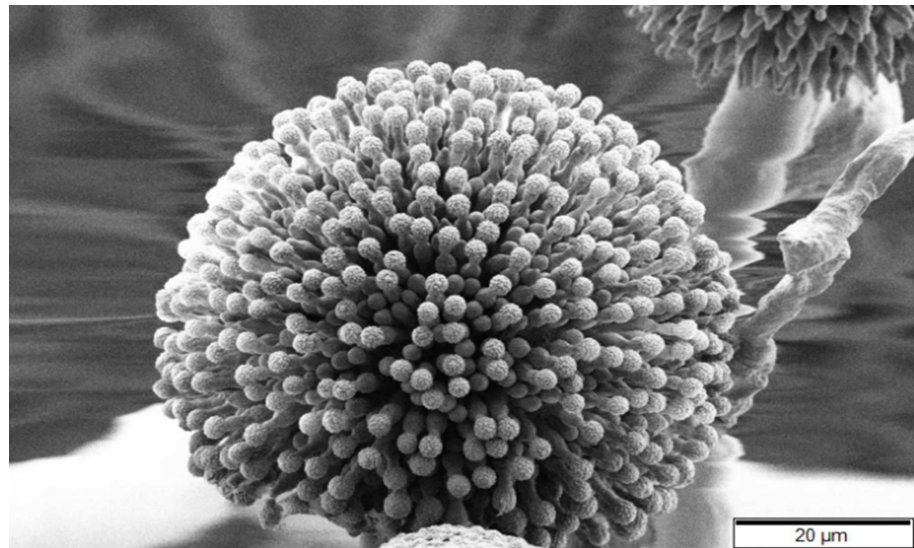
When discussing the reasons for nosocomial through the air, Dias, Costa and Pataro (2014, p. 31) show that:

The importance of conducting a microbiological assessment of the ambient air is justified due to the outbreaks of fungal and bacterial infections often associated with construction sites and remodeling in hospitals. A study carried out by VONBERG & GASTMEIER (2006) investigated 53 outbreaks caused by invasive Aspergillosis infection and found that 49.1% of probable or possible cases of *Aspergillus* spp. were related to construction and remodeling in hospitals, and 17% were related to refrigeration problems. The most common source of transmission was the air, and the lower respiratory tract was the main site of infection, followed by surgical and skin wound infections.

Frare (2009) adds to the aforementioned statement when it makes a reference to Frech (2005), describing an increase in cases of Aspergillose among immunosuppressed patients during remodeling processes within the hospital areas besides the non-reliable maintenance of air filter. He emphasizes then the importance of having total integration in the work and communication processes between the commissions that control nosocomial infections and the engineer areas, aiming at the prevention against such infections and avoiding outbreaks in hospitals.

Karman (2011) points out that *Aspergillus* fungus, with an average diameter of 2 to 3.5 μm , including its spore, is resistant to dehydration and may remain suspended in the air indefinitely if associated with dust and moisture.

The modern technologies for climatization systems can improve indoor air quality, since it is possible to design suitable filtration and temperature control systems, which you can regulate to meet various specific conditions. However, they should be employed with full awareness of the adverse impacts on human health. Although filters remove unwanted particles and breathable particles from outdoor air, they enable an environment that helps develop a multitude of bacteria and other infectious agents. As a result, it is necessary to estimate the costs for the maintenance of the building to monitor and replace filters regularly (STERLING; COLLET; RUMEL, 1991).



Picture 1: Fungo *Aspergillus*
Credit: Mogana Das Murtey and Patchamuthu Ramasamy [CC BY-SA 3.0 (<https://creativecommons.org/licenses/by-sa/3.0>)]

Among the various diseases caused by fungi and bacteria that spread through air conditioning systems in hospitals and health facilities, the *Aspergillus* is one of the main agents responsible for fungal infections, presenting high mortality rates, between 68% and 95% (FRARE, 2009). As Bernal (2015) said:

Aspergillus spp. is an opportunistic saprophyte widely spread across nature. It can cause a wide range of diseases, from allergies to invasive infections in humans. Invasive Aspergillosis (AI) is the most serious infection caused by *Aspergillus* spp. It affects mainly the lungs of immunosuppressed patients and may spread to deep organs. (BERNAL, 2015, p. 315).

3. Testing the quality of the air inside the ICU of a specialized high-complexity hospital

To test the presence of *Aspergillus* fungus in the sector, we will present the results from microbiological tests of air harvested in the ICU common treatment area at a public, state-managed, medium-sized specialized high-complexity hospital, located in the city of São Paulo.

The ICU of this hospital was remodeled in the first half of 2017, the process was completed in July of the same year. For the research, we have strategically chosen three samples of air: the first one from December 2016, under normal conditions, before remodeling had begun; the second, shortly after the work had finished, in August 2017; and the last one in November. In August, the thin and absolute filters were replaced in the air conditioning system that supplies to the building. The entire system receives preventive and corrective maintenance regularly, when required, which is overseen by a professional mechanical engineer. Prior to remodeling, an essential and contingent plan was prepared with the Institution, aiming at impacting as little as possible patients and other departments in the hospital.

Pictures 2 and 3 – Replacing F7 saturated bag filters, August 2017
Credit: Personal collection.



The analysis concerning the quality of indoor air were carried out following the recommendations put forward by the Brazilian Association of Technical Standards (ABNT) ISO/IEC 17025, NBR 10719 and by Ruling - RE n. 09, from MS/ANVISA, on 16 January 2003. Based on the regulatory standards, here there are the results obtained from our three tests:

Survey sampling	Date	Indoor air	Outdoor air	Ratio indoor/ outdoor air	Genera of fungi found	Current situation
		(UFC/m ³)	(UFC/m ³)	(UFC/m ³)		
Recommended levels		≤ 750		(Up to ≤ 1,5)		
Intensive Care Unit – ICU (common treatment area)	Dec/2016	128	387	0,3	<i>Clarasporium sp;</i>	Within recommended levels
					<i>Rhizopus sp;</i>	
	Aug/2017	135	202	0,7	<i>Clarasporium sp;</i>	Within recommended levels
					<i>Aspergillus sp;</i>	
	Nov/2017	71	497	0,1	<i>Clarasporium sp;</i>	Within recommended levels
					<i>Rhizopus sp;</i>	

Table 1 – Technical Standard #1

Source: Indoor air quality report after testing. Personal collection.

Location	Date	Air speed	Temperature	Humidity	Carbon Dioxide	Current situation
		(m/s)	(°C)	(%)	(ppm)	
Recommended levels		< 0,25	From 21 to 27	From 35 to 70	≤ 1000	
Intensive Care Unit – ICU (common treatment area)	Dec/2016	≤ 0,11	20,8	64	530	Within recommended levels
	Aug/2017	≤ 0,11	22,0	57	979	Within recommended levels
	Nov/2017	≤ 0,11	24,6	55	638	Within recommended levels

Table 2 – Technical Standard #2 and #3

Source: Indoor air quality report after testing. Personal collection.

Location	Date	Particulate air pollution	Current situation
		(µ/m ³)	
Recommended levels		< 80	
Intensive Care Unit – ICU (common treatment area)	Dec/2016	12	Within recommended levels
	Aug/2017	12	Within recommended levels
	nov/17	5	Within recommended levels

Table 3 – Technical Standard #4

Source: Indoor air quality report after testing. Personal collection.

Regarding the aforementioned Technical Standards, all results are within acceptable levels from a quantitative standpoint. On the other hand, from a qualitative viewpoint, Table 1 indicates the presence of fungus *Aspergillus* in the environment almost at the same time the works were being carried out.

As a consequence, and based on theory, it is possible to verify the presence of this microorganism is directly related to the intervention period, corroborating what Karman states (2011, p. 151):

The rowdiness caused by construction and remodeling works, especially in healthcare facilities, can release dust with airborne spores of *Aspergillus* fungi, which are potentially lethal for immunosuppressed patients. The *Aspergillus* fungus, which is 2 to 3.5 μm (diameter), is found on the soil, at moist environments and in rotting vegetables. It can also be found in ventilation systems that are not operating properly: air filters, window air conditioners, suction fans, false ceilings, acoustic ceilings, construction sites, exposed doors or windows, hospital vacuum cleaners, ornamental plants, pigeons etc. The dust from neighboring work sites can also affect healthcare facilities since the *Aspergillus* is sporulated and airborne (airborne bacterium). The humidity of an environment also contributes to its proliferation. Thus, equipment and instruments colonized with the fungus, when stored in humid environments, might become a source of infection.

Even though the amount of fungus we found respects the standards, we emphasize that taking precautions in the areas under work is essential to keep the maintenance of climatization systems updated and, thus, avoiding that such systems ever become potentially harmful agents. For this intervention, specifically, the hospital technical team did not find infections whose main cause was the *Aspergillus*. Nevertheless, the fungus remains, indeed, a threat, especially to patients and others, who visit or work at the hospital.

4. Conclusion

In this paper, we concluded that remodeling hospital environments increase the circulation of *Aspergillus.sp*, with greater risk to the ICU sector. Therefore, the judicious assembly of physical barriers and, above all, the proper maintenance of climatization systems can prevent this fungus from accommodating and spreading itself through the ducts, which would represent potential risks to patients. In the case we have presented, it is not possible to assert the source of the microorganism was directly associated with the climatization system, however, the maintenance carried out in the air conditioning equipment certainly helped isolate and stop the growth of *Aspergillus.sp* fungus in the environment.

Indeed, it becomes clear that the topic discussed here is very relevant and deserves our special attention. Above all, it is a warning against all threats that come with having around a fungus with higher pathogenic risk. Moreover, it justifies a more thoroughly examination focusing on hospital application by professionals who share a sensitive look towards these issues and envision the future of healthcare buildings to effectively provide healthcare assistance.

References

- BERNAL, M. L.; ALASTRUEY, I.; CIENCA, E. M. Diagnostics and susceptibility testing in *Aspergillus*. 2015. Disponível em: <<https://www.id-hub.com/2017/02/24/diagnostics-susceptibility-testing-aspergillus/>>. Acesso em: 12 dez. 2017.
- BICALHO, F. de C. A Arquitetura e a Engenharia no controle de infecções. Rio de Janeiro: Rio Books, 2010. 135 p.
- BRICKUS, L. S. R.; AQUINO NETO, F. R. de. A qualidade do ar de interiores e a química. *Química nova*, v. 22, n. 1, p. 65-74, 1999.
- COSTA, M. R. Recomendações para o controle de qualidade do ar climatizado. 2007. 12 f. Tese (Doutorado) - Curso de Comissão de Controle de Infecção Hospitalar, Universidade Católica de Goiás, Goiânia, 2007.
- DIAS, R. S.; COSTA, P. D.; PATARO, C. S. Ambiente hospitalar como fator de risco para a ocorrência de infecções oportunistas por *Staphylococcus Aureus* Multirresistentes. *Periódico Científico do Núcleo de Biociências: Centro Universitário Metodista Izabela Hendrix*, Belo Horizonte, v. 4, n. 7, p. 27-35, ago. 2014.

FRARE, F. Infecção hospitalar por aspergillus: análise da implantação de uma unidade de ambiente protegido. 2009. 28 f. Trabalho de Conclusão de Curso (Graduação) - Curso de Enfermagem, Universidade Federal do Rio Grande do Sul, Porto Alegre, 2009.

KARMAN, J. B. Manutenção e segurança hospitalar preditivas. São Paulo: Estação Liberdade, 2011. 437 p.

MORAES, F. M.; RAU, C. Infecções relacionadas à assistência à saúde (IRAS): impacto na saúde e desafios para seu controle e prevenção. 2011. 17 f. Monografia (Especialização) - Curso de Pós-graduação em Vigilância Sanitária, Pontifícia Universidade Católica de Goiás, 2011.

QUADROS, M. E. Qualidade do ar em ambientes internos hospitalares: parâmetros físico-químicos e microbiológicos. 2008. 135 f. Dissertação (Mestrado) - Curso de Engenharia Ambiental, Universidade Federal de Santa Catarina, Florianópolis, 2008.

SILVA, E. B.; GOMES, S. R. Ar-condicionado: herói ou vilão em unidades de terapia intensiva? REINPEC: Revista Interdisciplinar do Pensamento Científico, Itaperuna, v. 1, n. 1, p. 222-232, jan. 2015.

SINGH, N.; BRENNAN, P. J.; BELL, M. A compedium of strategies to prevent healthcare-associated infections in acute care hospitals: um compêndio de estratégias para a prevenção de infecções relacionadas à assistência à saúde em Hosp. Infection Control And Hospital Epidemiology, Cambridge, v. 29, n. 10, p. 901-994, out. 2008.

STERLING, T. D.; COLLET, C.; RUMEL, D. A epidemiologia dos "edifícios doentes". Revista Saúde Pública, São Paulo, v. 25, n. 1, p. 56-63, jan. 1991.

References Concerning the Technical Standards

ANVISA - Agência Nacional de Vigilância Sanitária. Importância dos projetos de sistemas de climatização em estabelecimentos assistenciais de saúde (EAS). Brasília: Anvisa, 2009. 4 p.

_____. RDC nº 50 Normas para projetos físicos de estabelecimentos assistenciais de saúde. 2. ed. Brasília: Anvisa, 2004. 160 p.

_____. Resolução RE nº 09, de 16 de janeiro de 2003. Diário Oficial da União, Orientação técnica elaborada por Grupo Técnico Assessor sobre padrões referenciais de qualidade do ar interior em ambientes climatizados artificialmente de uso público e coletivo. Brasília, DF: Imprensa Oficial, 20 jan. 2003. n. 14, Seção 1, p. 35-37.

BRASIL. Constituição (1992). Portaria nº 930, de 27 de agosto de 1992. Infecção Hospitalar: Ministério da Saúde. Disponível em <<http://www.ebah.com.br/content/ABAAA90AL/portaria-n-930-27-agosto-1992>>. Acesso em: 21 jun. 2017.

BRASIL. Constituição (1998). Portaria nº 3.523, de 28 de agosto de 1998. Regulamento Técnico. Procedimentos de verificação de limpeza, remoção de sujidades por métodos físicos e manutenção do estado de integridade e eficiência de todos os componentes dos sistemas de climatização.

A pathway for death: the flow and connections between environments and its occupants

Author:
Cris Vieira

ABSTRACT

Death has its pathway inside the hospital and, like it happens with other flows, it must be considered from the beginning, as one of the premises of the project. This article aims at connecting the hospital areas to death and those who go through death; and thinking how we can consider the flow regarding such connections. For that it was necessary to filter publications about death and architecture to design how there could be a contribution to frame a project concerning the pathway of death. The research methodology employed was the bibliography verification. The conclusion was that there is the need to catalogue recommendations for the new architecture projects, considering the humanization within the architecture spaces and focusing on the flow and well-being of those facing death.

KEYWORDS

Death; Hospital architecture; Project design

Introduction

Death has always occupied our minds, often invoking negative aspects. The purpose of presenting a discussion about the architectonic environment concerning such issue is not to prevent suffering, or hide it, but to treat the environment in a humane manner so death can be lived properly by anyone affected by it.

Throughout the centuries, the search for health has been changing its focus and practices. During Classicism, to achieve both physical and mental health such pursuit was through religious faith and mysticism, usually by visiting temples dedicated to them. In the Middle Ages, the Catholic Church was committed to promoting health and offering healthcare. There were also those who used pagan practices and believed that being ill was due to punishment, possession or witchery, that period was known as the Dark Ages. The places aimed at the promotion of health, where people used to go looking for comfort and a chance to live longer, soon became a deposit for social issues. Therefore, in the final years of the Middle Ages, hospitals had increased its size and role, absorbing the vulnerable population who was seen as a problem. The elderly, orphans, mental impaired, socially impaired, vulnerable, prostitutes, unemployed and sick people: hospitals began to impart a stronger negative reputation due to that gathering of people in such diverse situations. Death was a fact; hospital was synonym for disorder and death.

The 18th century marked the beginning of the hospital as a space for healing. Medicine had begun to be recognized as science and the hospital as a place of treatment. The focus was the disease, the technologies, the drugs and the procedures to achieve healing.

Nowadays, hospital's philosophy is to humanize assistance, which was first designed and gained support in the end of the 20th century, when the patient, and not the illness or the healing, was praised.

Healthcare facilities have several environments defined to be used by a diversified group of people: patients, health professionals, managers, guests and employees. Every occupant with its own relationship and activities, transforming one same environment in different spaces. (SANTOS, BURSZTYN, 2014, Chapter 6)

Highlighting the death flow: defining the problem

Although hospitals have been going through profound changes concerning their role, technologies, spaces and concepts throughout time, death has always been present, which makes it relevant to adopt a more humanized approach.

When planning health architecture, the humanized approach requires a new conception of design, one capable of incorporating to the necessary technical, formal, functional and economical studies some consideration regarding the effects of the environment over its users, exploring the potential contribution the space could have over users' autonomy, well-being and reestablishment of health. (FONTES, 2007, p.55)

It is necessary to consider the influence of the environment over its occupants, and vice versa, whether when remodeling the facility or when planning new ones, focusing on everyone's well-being and on every possible occurrence, overlooking neither the moment of the death nor the deceased when conceiving the architectonic project.

Under such conditions, the architectural elements are one of the matrices of individual and group experiences, enabling a humane and social context around them. In this sense, the space is the object of a new interpretation: the reality of our behaviors, and the social life, are produced and developed in diverse places that are more than simply exterior envelopes. (FISCHER, 1994, p.16)

This subject first got the author's attention during a conversation she had with a nurse, who was studying at the Post-Graduation Program in Architecture at the Universidade Federal do Rio de Janeiro (UFRJ) and needed help with her post-graduation research. During their talk, the nurse described an unpleasant situation she went through: the need to carry a newborn baby who had just passed away through areas where there were parents waiting for information regarding their own babies, who were being taken care of and could also die. Some parents even stopped her to ask for information, and in order not to create a feeling of sadness and disbelief among them she pretended to be carrying a sleeping baby. That situation set an example of the importance of thinking about the flow taking into consideration the work of healthcare professionals and the well-being of others.

That was how the central problem emerged: how to deal with the course of the dead, with a limited space designed after an architectonic project,

to enable the healthcare professional to carry out his/her work properly, bearing in mind who have suffered the loss and other users who could be overwhelmed by the situation.

Thinking about death and the hospital environment

To justify the importance of the subject and depict the national and international production regarding death in the hospital environment, the author carried out a bibliography research in February 2019.

For that, the author chose the following phrases as descriptors: Hospital architecture; Hospital planning; Health architecture; Healthcare environments; Healthcare facilities; Healthcare institutions architecture; Death; Dealing with death; Thanatology. The search for the descriptors was carried out on the Virtual Library of Health - BVS/Decs. The death-related descriptors were paired with the architecture-related descriptors.

The research using the descriptors was carried out on CAPES database and on UFRJ's Minerva portal. As a result, there was a total of 1.267 texts, as shown on Table 1. Some limits were established to have clear specification, reducing the sampling size by excluding duplication of texts; texts based on quantitative research; and texts that were not focused on the subject matter. The texts considered relevant for the study were the ones who led to complete works available online in Portuguese, English or Spanish and that, after reading the abstract and some specific parts of it, proved their correlation with the subject proposed by the work. A summary of the search follows:

Descriptors*		Database		Total
		MINERVA	CAPES	
1	Healthcare architecture and death	0	44	44
2	Healthcare architecture and thanatology	0	0	0
3	Healthcare architecture and dealing with death	0	12	12
4	Healthcare planning and death	1	414	415
5	Healthcare planning and thanatology	0	3	3
6	Healthcare planning and dealing with death	0	44	44
7	Healthcare facilities and death	0	293	293
8	Healthcare facilities and thanatology	0	1	1
9	Healthcare facilities and dealing with death	0	72	72
10	Healthcare institutions architecture and death	0	82	82
11	Healthcare institutions architecture and thanatology	0	1	1

Table 1 – Results from the search using descriptors

Descriptors*		Database		Total
12	Healthcare institutions architecture and dealing with death	0	36	36
13	Humanizing assistance and death	3	222	225
14	Humanizing assistance and thanatology	0	9	9
15	Humanizing assistance and dealing with death	0	30	30
TOTAL		4	1.263	1.267

Table 1 shows the total number of texts according to the database and the combination of descriptors. The search online was carried out in February 2019.

Table 2 – Detailing the sampling

Descriptors*		Database		Total
		MINERVA	CAPES	
1	Healthcare architecture and death	0	2	2
2	Healthcare architecture and thanatology	0	0	0
3	Healthcare architecture and dealing with death	0	0	0
4	Healthcare planning and death	0	1	1
5	Healthcare planning and thanatology	0	0	0
6	Healthcare planning and dealing with death	0	0	0
7	Healthcare facilities and death	0	0	0
8	Healthcare facilities and thanatology	0	0	0
9	Healthcare facilities and dealing with death	0	0	0
10	Healthcare institutions architecture and death	0	1	1
11	Healthcare institutions architecture and thanatology	0	0	0
12	Healthcare institutions architecture and dealing with death	0	0	0
13	Humanizing assistance and death	0	3	3
14	Humanizing assistance and thanatology	0	0	0
15	Humanizing assistance and dealing with death	0	0	0
TOTAL		0	7	7

Table 2 shows the total number of texts according to the database and the combination of descriptors and applying the criteria of inclusion, exclusion and eliminating repeated texts.

This first search confirmed that the bibliography about death and the flow within hospital environments regarding the architectonic project has not yet been studied, i.e., the topic would be original, justifying its relevance.

The research methodology

The work methodology is based on two aspects: using texts about hospital architecture and death and analyzing hospital buildings. Besides the texts found via database research, the author will use some texts received during two classes she took at the Post-Graduation Program in Architecture at the School of Architecture at Universidade Federal do Rio de Janeiro - PROARQ/FAU-UFRJ: Architecture and Healthcare Space Project; and History and Tendencies classes, both taken.

To add to the online study the author also considered the work of YIN (2010) concerning research methodology and first defined key questions to guide the research:

1. How can we think the flow of the deceased from the beginning of the architectonic project?
2. How does the deceased impact the people within the hospital environment psychosocially?
3. What can be identified in existing projects as good or bad practice regarding the pathway of the deceased within a hospital flow?
4. What can be done when conceiving architecture projects to humanize the issue of death regarding the pathway taken and the different people inside a hospital?
5. How can architecture impact this issue focusing on health professionals?

Table 4 shows which research methodology is more appropriate based on the questions proposed:

Methodology	Type of inquiry	Does it require control over behavioral events?	Does it focus on contemporary events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archive analysis	Who, what, where, how many, how much?	No	Yes/No
Historical research	How, why?	No	No
Case study	How, why?	No	Yes

Table 4 – Relevant situations for different research methodologies.
Source: YIN (2010), page 29.

Since three out of five inquiries used the term “How”, it became clear the advantage towards the Case Study methodology. YIN (2010) believes it is

the most appropriate one since this inquiry deals with operational bonds that must be designed throughout time, more than simply frequencies or incidences, being depicted as exploratory. It is also worth highlighting that:

The case study is more suitable to assess contemporary events, but when relevant behaviors cannot be manipulated (...) the exclusive force of a case study is its ability to deal with a broad variety of evidences – documents, artifacts, interviews and observations (...). (YIN, 2010, page 32.)

The term “What”, from the other two inquiries, enables the use of two branches of methodologies: sampling and archive analysis. In this sense, it is suitable to use such research methodologies when the intention is to identify and enumerate.

Considering the analysis of the inquiries brought together, the case study is the most appropriate methodology to be used since, according to YIN (2010), this is an observational investigation based on experience, confirming the contemporary phenomenon of real life when the limits between phenomenon and context are not clear. The flows in different healthcare facilities give rise to technically different situations, where there are more variables than data, with substantial sources of evidence.

Conclusion

The pathway of death, within the concept of humanized hospital spaces, must be considered beforehand when conceiving the project. Since the bibliography about the relationship between death and the hospital environment is scarce, this article demonstrates the relevance of the topic. Therefore, the author concludes it is necessary to study existing hospital buildings to verify technically the flows and circulations and the relationship between death, hospital environment and its occupants.

The case study has proved to be the most suitable research methodology. And to depict the reasoning about death and the deceased in the relationship between people using hospital environments and the development of hospital architecture, the author concludes it is necessary to list recommendations to devise new architectonic projects, envisioning the humanization of architectonic spaces with focus on the flows and on the well-being of those facing the possibility of death.

*Translator's Note: The words used in the research were translated for means of clarity. The original terms in Portuguese are as follows: 1. Arquitetura hospitalar and morte, 2. Arquitetura hospitalar and tanatologia, 3. Arquitetura hospitalar and atitude frente à morte, 4. Planejamento hospitalar and morte, 5. Planejamento hospitalar and tanatologia, 6. Planejamento hospitalar and atitude frente à morte, 7. Instalações de saúde and morte, 8. Instalações de saúde and tanatologia, 9. Instalações de saúde and atitude frente à morte, 10. Arquitetura de instituições de saúde and morte, 11. Arquitetura de instituições de saúde and tanatologia, 12. Arquitetura

de instituições de saúde and atitude frente à morte, 13. Humanização da assistência and morte, 14. Humanização da assistência and tanatologia, 15. Humanização da assistência and atitude frente à morte.

References

FISCHER, Gustave. Psicologia Social do Ambiente. Instituto Piaget. Lisboa, 1994. (ISBN: 978-97-2929-542-3).

FONTES, Maria Paula Zambrano. Humanização dos Espaços de Saúde: Contribuições para a Arquitetura na Avaliação da Qualidade do Atendimento. Rio de Janeiro: FAU/PROARQ, 2007. [Tese]. Universidade Federal do Rio de Janeiro, Rio de Janeiro, 2007.

SANTOS, Mauro, BURSZTYN, Ivani. O Caminho do Paciente: Conceitos e Ferramentas para a Avaliação de Estabelecimentos de Atenção à Saúde. Livro Arquitetura e Engenharia Hospitalar: Planejamento, Projetos e Perspectivas - Capítulo 6. Rio de Janeiro, Rio Books, 2015. (ISBN: 978-85-6155-658-7).

YIN, K, Robert. Estudo de Caso: Planejamento e Métodos. São Paulo, Bookmed, 2010. (ISBN: 978-85-7780-655-3).

An analysis of the sectorization and comfort in contemporary children's hospitals

Authors:

João Pedro S. Nozela
Andrea D. Leitner
Sílvia A. M. G. Pina

ABSTRACT

Healthcare buildings are increasingly focusing more on health rather than on the disease. The relevance of this research is justified by the high complexity of cutting-edge hospital buildings and by the number of lives directly influenced by their activities. Therefore, this article aims at analyzing the sectorization, flows and comfort of two contemporary children's hospital, presenting solutions and alternatives to meet their occupants' needs – patients and their guests; healthcare and non-healthcare teams. The authors employed the monograph-style methodology with explicative research, which has contributed for readjustments and new projects covering similar buildings, identifying issues concerning humanization of architecture within the scope of environmental comfort of this type of construction. The research was based on the analysis of current national and international texts; the RDC 50 (2002) ruling; and the Universal Design, holistic elements and ergonomic solutions for the triple inclusion of users. The results points to the emphasis of sectorization according to the dislocation of users; the attention to unwanted flow encounters; the choice of ludic finishing material; the use of a great range of resources; the control of lights, including with colors and indirect light when suitable for a children's hospital environment; and the broad use of automation systems.

KEYWORDS

Health architecture; Contemporary hospitals; Comfort; Sectorization; Flows

1. Introduction

Analyzing the pre or post occupation of a health facility is an extremely important tool to investigate the best results and solutions for future facilities. Employing the sectorization of activities; analysis of internal and external flows; humanization of architecture; and Ron Mace's Seven Principles of Universal Design, the goal is always a building with easy access and communication; flexible spaces; efficient treatment; and areas that offer comfort and divert attention away from the disease.

The article exposes the analysis of two contemporary children's hospital: the Suzhou Children's Hospital, located in the city of Suzhou, China, whose plan was conceived in 2010; and the Ann & Robert H. Lurie Children's Hospital, in Chicago, USA, opened in 2012. The study was carried out based

on material released by the firms responsible for the projects and taking into consideration the concepts applied for hospital buildings using vertical typology. The technical standards were taken from the RDC 50 regulation (2002) and from studying the current bibliography references.

2. Goals

The goal of this work is to examine the sectorization, the flows and the comfort of two healthcare buildings, contemporary children's hospitals, which present solutions and alternatives to meet the needs of their occupants, patients, guests, visitors, healthcare and non-healthcare teams.

3. Methodology

To carry out our work, we have chosen to use exploratory research by surveying and analyzing bibliography references and the main normative content; surveying and analyzing information concerning the studied projects; reading and studying post-occupation assessment on pre-existing healthcare buildings; analyzing and interpreting the results; developing and summarizing the results from the research.

3.1. The hospitals

Both projects we have chosen are vertical constructions with more than 100.000 m² built. The Chinese hospital has 13 floors in its highest tower and holds a large horizontal base on the east to west axis, enabling bigger openings and contact with the outside environment. The American hospital, on the other hand, comprises two overlapped vertical blocks and a total of 23 floors.

The Suzhou Children's Hospital project was designed by HKS Architects and presents an extensive sectorization and architecture humanization work. The new building will replace the current hospital, which operates in an 80-year-old building that have undergone minimum adaptations since it was first conceived. The new project favors updated concepts of children care, and the architecture and conception focus on reducing the stress and fear among patients and visitors. The spaces were designed to meet the physical and psychological needs of the local population, considering their uniqueness and characteristics. To humanize the assistance provided by the staff, the project included access to outdoor and ventilated areas, which were exclusively designed for them, and a thorough sectorization study to shorten the distances they must cover within the hospital. (JORDANA, 2011). The lodging for the staff was planned in an exclusive development, respecting ergonomic-related issues. Another point to highlight from the project is the natural light, which was leveraged to its fullest for better energetic usage in the benefit of users. Besides respecting the circadian rhythm, such contact may decrease the time of hospitalization and the number of drugs taken by inpatients. (ULRICH, 1999).

According to Jordana (2011), the inspiration for the project came from kites, a common playful activity among local children that dates to more than 2.800 years old. The colorful kites flying across the sky bring happiness and comfort to any children. Therefore, the Suzhou Children's Hospital has its

own gigantic kites in the garden and recreational areas. In the main entrance, the kite was also the inspiration for the marquee, which offers protection against extreme weather conditions in a ludic fashion, besides color and amazement for visitors since the first contact with the health facility (refer to Illustration 1). Aiming at the valorization of the Chinese culture and, particularly, the host city, the plan envisions some water gardens, known for their beauty and sense of calmness. The 396.000 m² built hold 600 beds for admission and there is an estimate of 3.000 general patients for daily assistance daily and 500 in emergency situations.

The Ann & Robert H. Lurie Children's Hospital of Chicago was designed by ZGF Architects, Solomon Cordwell Buenz and Anderson Mikos Architects firms. The building comprises a vertical tower of 116.128,8 m² (refer to Illustration 2) and is located inside the Northwestern University's Feinberg School of Medicine Campus. It is worth mentioning its proximity and connection with the Prentice Women's Hospital. Nowadays, the hospital offers 360 beds, more than 288 private bedrooms and an average of 200.000 appointments per year.

The architecture team added an outdoor solution that stands out in the project: three pedestrian-only bridges, one connected directly to the hub of parking lot facilities and the remaining two granting access to the Prentice Women's Hospital. For the inside, the project provides a patio/garden; a lobby with translucent cover and 180-degree outside view overseeing the Seneca Park, the Contemporary Art Museum and the Water Tower. Moreover, there are elements that encourage humanization, like an area with an exhibition of floating whales; a fish tank; information spots well-signalized to help with wayfinding; food court that resembles an open-air market; healing gardens; a stage for entertainment events; and a tree house. All the procedures carried out in the project granted the hospital a LEED certification (Leadership in Energy and Environment Design).



Illustration 1: Suzhou Children's Hospital façade
Credit: image adapted from original published on ArchDaily website. Available at: <https://www.archdaily.com/108031/suzhou-childrens-hospital-hks>. Access on 04/06/2019.

3.1.1. Suzhou Children's Hospital

The Suzhou Children's Hospital presents good initial sectorization, it isolates services for the many specified areas. The complex occupies a whole block and is connected to the outside environment through three of its four sides,

Illustration 2: Lurie Children's Hospital façade
Credit: Ann & Robert H. Lurie Children's Hospital of Chicago



which makes it easy to access the adjoining blocks from the main building (Administrative, Educational and Research; Lodging; Infectious Diseases) without compromising the wayfinding, since the volumetric construction of the hospital imposes itself and prevails. Overall, there are four access to the complex, two that lead directly to the front desk and the underground parking lot, and the remaining two connecting to back up services and employee-only entrance. The presence of controlled access, both outside the complex and inside the buildings, brings more safety for users, as well as protection against intrusions in the common areas (refer to Illustration 3).

On the ground floor, the main building is connected with the rest of the complex through five access: two dedicated to immediate care; two sideways that give access to services; and the main entrance that gives access to ambulatorial patients (refer to Illustration 4). At the diagnosis and therapy center, the indoor garden placed from east to west along a corridor is a pleasant alternative view to appreciate, besides alleviating the flow on the main route of circulation (north to south), making dislocations and internal activities easier.

Besides the gardens and the patios with gardens, the project presents sustainable alternatives, which ensured its LEED Certification. The project envisions using water from an adjoining channel for the gardens, water-gardens and ventilation systems (refer to Illustration 3).

The vertical circulation is guaranteed by six main sets, five of them equipped with elevators and fragmented staircases and, one of them, with a central escalator. Three sets are exclusive to the use of patients, healthcare team

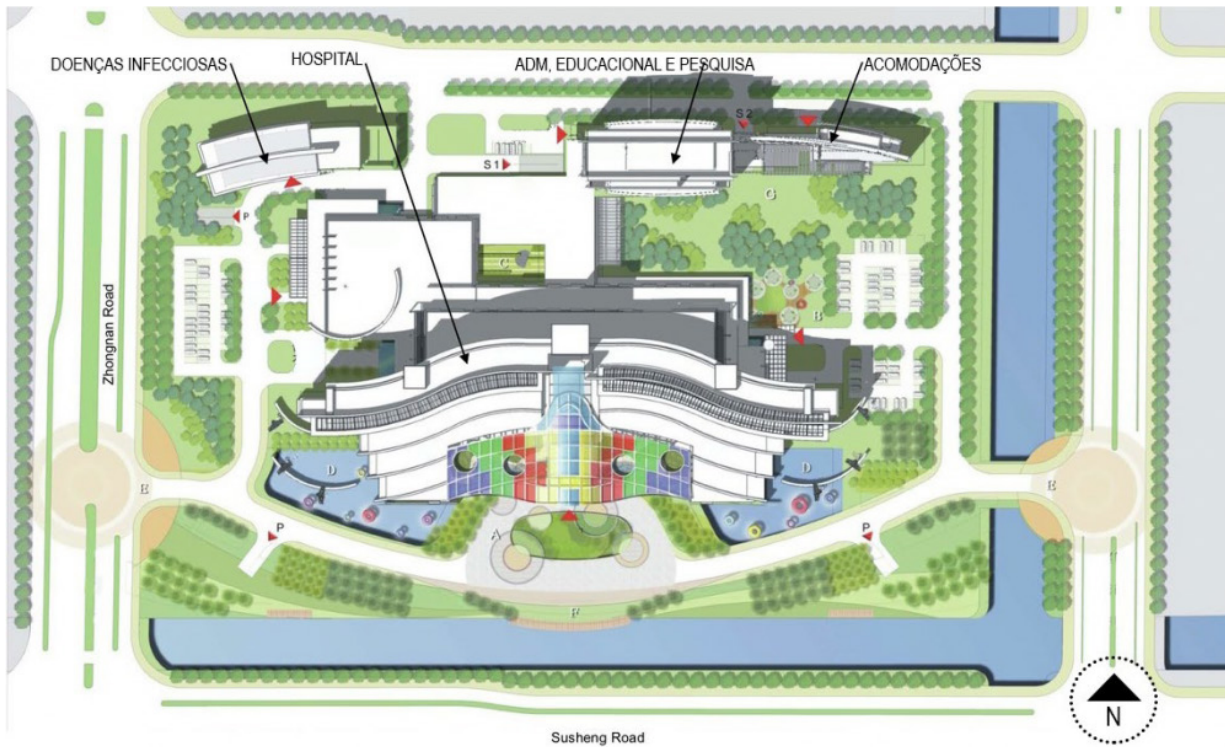


Illustration 3 – Implementation, Suzhou Children's Hospital
Credit: image adapted from original published on ArchDaily website.
 Available at: <https://www.archdaily.com/108031/suzhou-childrens-hospital-hks>. Access on 04/06/2019.

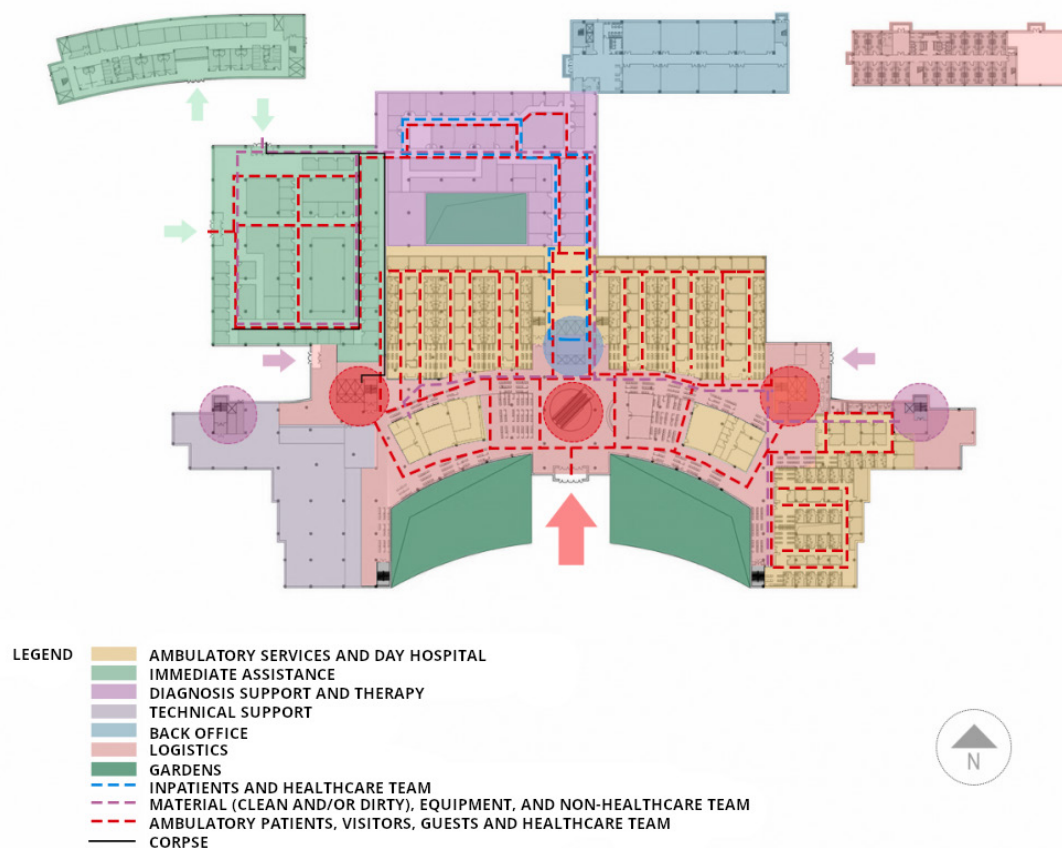


Illustration 4 – Ground Floor at Suzhou Children's Hospital
Credit: image adapted from original published on ArchDaily website. Available at: <https://www.archdaily.com/108031/suzhou-childrens-hospital-hks>. Access on 04/06/2019.

and guests – as identified on the ground floor project with red circles; one set is totally dedicated to inpatients and the healthcare team – blue circles; and two sets for the non-healthcare team, material and equipment – purple circles (refer to Illustration 4). The sets were established on sites that offer direct connection with the east-west circulation axis, which is replicated on every superior floor as the main circulation flow. As a preventive measure to fight fire, every set of elevators has adjoined fragmented staircase, whose location makes the wayfinding simpler. At the staircase there is no identification of escape routes for people with disability or reduced mobility – as required by Technical Ruling n° 11/2018 – where they could wait to be rescued in the event of an emergency.

The first floor shows the same sectorization and main flows as the ground floor, which helps with wayfinding and gives users a feeling of calmness. That floor holds the surgery center, located on the upper part of the project; ambulatory care; and the day hospital on its central part, as shown on Illustration 5. The technical support is set aside for expansion.

On the reference floor plan, for admission, the circulation of users is from east to west, both ways (refer to Illustration 6). Across the central elevators, two symmetrical environments divide the flow directly to either the east or west wings, helping with surveillance, safety and the control against unwanted displacement on the floor.

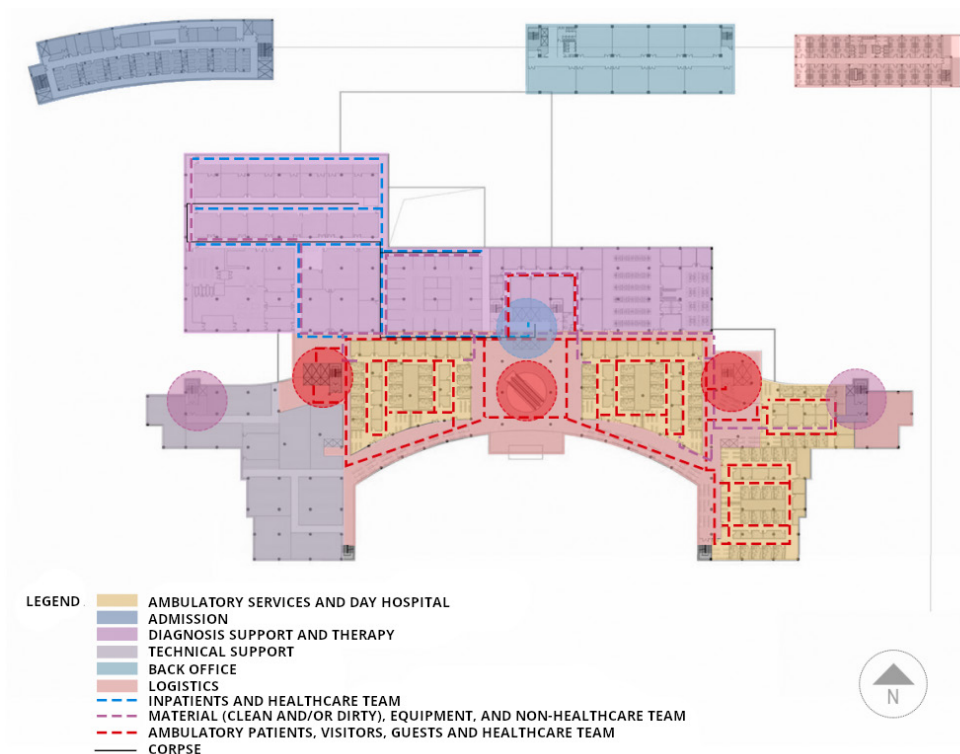


Illustration 5 – First floor at Suzhou Children's Hospital
Credit: image adapted from original published on ArchDaily website.
 Available at: <https://www.archdaily.com/108031/suzhou-childrens-hospital-hks>. Access on 04/06/2019.

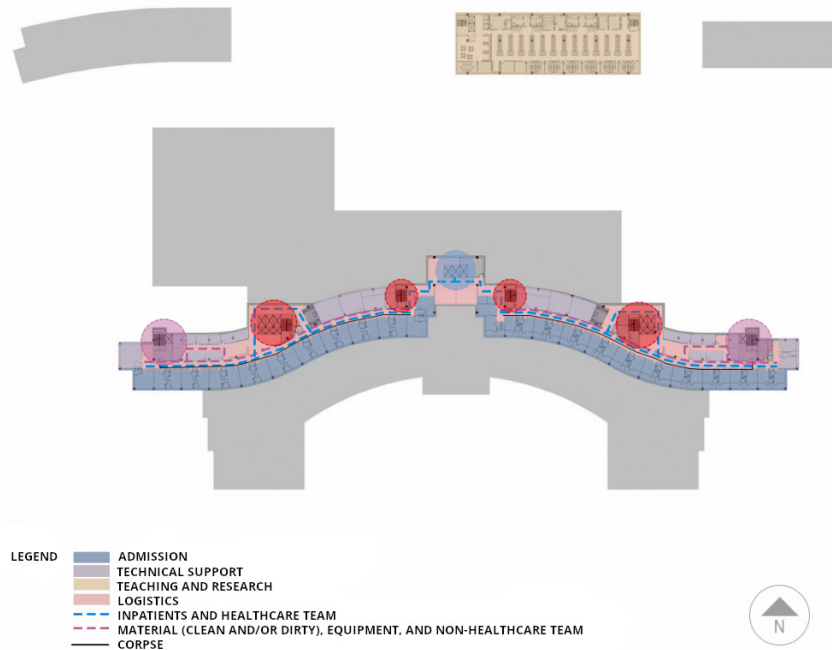


Illustration 6 – Reference floor plan at Suzhou Children's Hospital
Credit: image adapted from original published on ArchDaily website. Available at: <https://www.archdaily.com/108031/suzhou-childrens-hospital-hks>. Access on 04/06/2019.

3.1.2. Lurie Children's Hospital

The Ann & Robert H. Lurie Children's Hospital of Chicago presents a completely vertical typology. The building is taller, with more floors, all of which with well-defined sectorization and axis for main circulations that are replicated on the floors with the same vertical sectorization. There is no underground floor in the building.

The ground floor offers direct connection with two access routes and is the core of distribution for higher floors. On this floor we find the ambulance parking area; the employee-only entrance; the loading dock area; the emergency rooms; and the elevators, which take users to the superior healthcare floors (refer to Illustration 7). Its well-defined vertical sectorization divides the floors as follows: from the ground to the second floor, we find the emergency rooms and the day hospital. From the 3rd to the 6th, diagnosis support and therapy. The 8th floor is dedicated to back office (material depot, central pharmacy, administrative), which is followed by the technical floor, on the 9th. Admissions are carried out on higher floors (from the 12th to the 21st) for better flow control.

As a playful alternative to offer comfort, the hospital presents elements designed to entertain children, encouraging better connection between the children and the space, diverting their attention from the disease by promoting spaces where they can have fun and play, even if inside a healthcare institution. The humanization seen in this example reveals itself as a standard procedure conceived at the conception of the building all the way through the staff behavior and methodologies applied in procedures by the healthcare team.

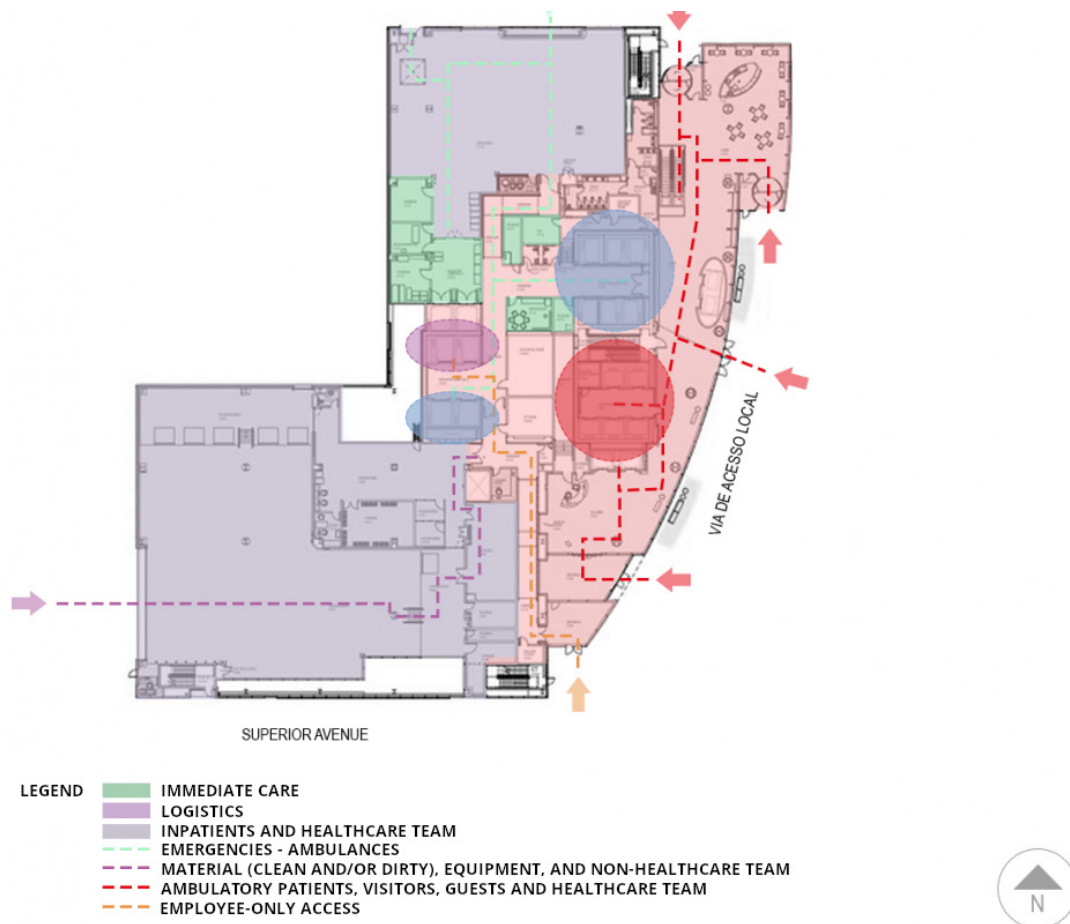
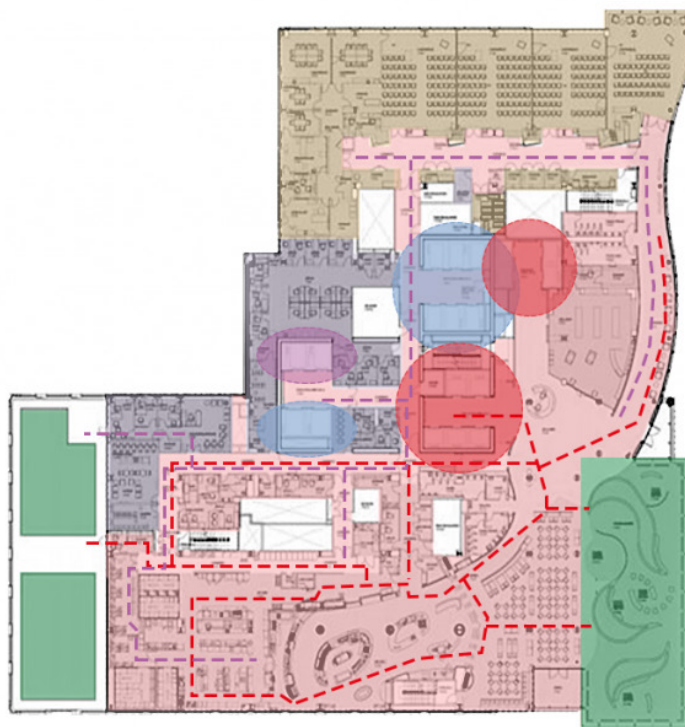


Illustration 7 – Ground Floor at Ann & Robert H. Lurie Children's Hospital
Credit: image adapted from original published on ArchDaily website. Available at: <https://www.archdaily.com/909319/ann-and-robert-h-lurie-childrens-hospital-of-chicago-zgf-architects-plus-scb-architects-plus-anderson-mikos-architects>. Access on 04/06/2019.

On the 10th floor (refer to Illustration 8) the vertical sectorization changes, offering public spaces for the family and other visitors. Using a different designing language, the floor offers more anthropometric comfort and a new set of elevators to drive guests. The floor becomes an area of transition and holds more fluid and playful shapes, where it stands out the sky-garden with double ceiling height so visitors can enjoy and relax. The sky-garden is totally connected to the food court and the garden patio. This floors also holds a space dedicated to education and lectures.

On the admission floor plan, the bedrooms for admission are located within the perimeter with natural light and ventilation (refer to Illustration 9). Nursing stations are lined up across the bedrooms, bringing a feeling of safety to patients, besides allowing more control to the staff. The floor also offers support rooms for the staff and well-organized circulation, where the flow of patients and their guests is separated from the operational flow of healthcare and non-healthcare teams. There are also isolation rooms.

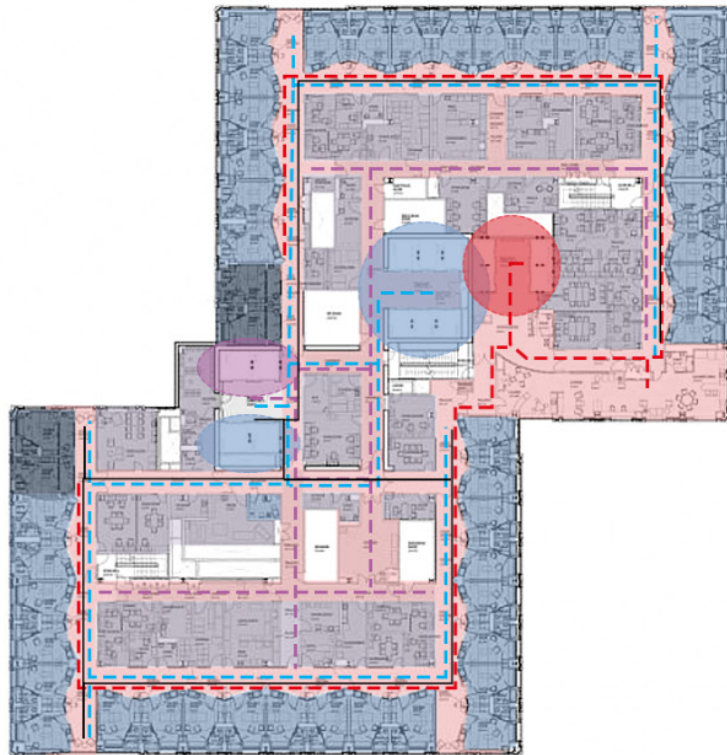


- LEGEND**
- TEACHING AND RESEARCH
 - GREEN AREAS - GARDENS
 - TECHNICAL SUPPORT
 - LOGISTICS
 - INPATIENTS AND HEALTHCARE TEAM
 - MATERIAL (CLEAN AND/OR DIRTY), EQUIPMENT, AND NON-HEALTHCARE TEAM
 - AMBULATORY PATIENTS, VISITORS, GUESTS AND HEALTHCARE TEAM



Illustration 8 – 10th floor at Ann & Robert H. Lurie Children's Hospital

Credit: image adapted from original published on ArchDaily website. Available at: <https://www.archdaily.com/909319/ann-and-robert-h-lurie-childrens-hospital-of-chicago-zgf-architects-plus-scb-architects-plus-anderson-mikos-architects>. Access on 04/06/2019.



LEGEND	
	ADMISSION
	TECHNICAL SUPPORT
	LOGISTICS
	ADMISSION - ISOLATION ROOMS
	INPATIENTS AND HEALTHCARE TEAM
	MATERIAL (CLEAN AND/OR DIRTY), EQUIPMENT, AND NON-HEALTHCARE TEAM
	AMBULATORY PATIENTS, VISITORS, GUESTS AND HEALTHCARE TEAM
	CORPSE



Illustration 9 – 11th floor at Ann & Robert H. Lurie Children's Hospital

Credit: image adapted from original published on ArchDaily website. Available at: <https://www.archdaily.com/909319/ann-and-robert-h-lurie-childrens-hospital-of-chicago-zgf-architects-plus-scb-architects-plus-anderson-mikos-architects>. Access on 04/06/2019.

4. Results

Both children's hospitals have as their mission the search for humanization, adjusting their environments so their occupants can have a better experience. Consequently, the analyses indicated positive results in both case studies, with clear sectorial organizations and systematized internal flows. Both children's hospital are points of reference and present relevant differences. While the western hospital occupies just one building lot in the busy and verticalized central area of Chicago, the eastern hospital is spread over one block, ensuring good circulation of vehicles and distribution of flows and eliminating traffic jams with its four access to the unity. The American hospital concentrates the highest number of outside access, which may be justified by its corner location. A smaller number of outside accesses enable better control of inside flows.

Considering that the beginning of flows starts at sectorization, the Suzhou Children's Hospital has intense horizontal dislocations, focused on the east to west axis and, as a consequence, presents great openings and excellent communication with the outside environment. At the same time, the vertical typology of the American hospital gives rise to less horizontal dislocations and greater use of vertical displacements, with clear flow segregation through a psychological barrier imposed by the difference of levels. In both cases, the assistance body is in the central area of the blocks, which is better explored at the Lurie Children's Hospital.

In both cases, the vertical circulation is appropriately divided and located on areas of easy access. As noticed, they have opted for three main groups of users to differentiate the blocks: outside patients and guests; material, equipment and non-healthcare team; and inpatients, healthcare team and back office.

By mapping the flow, it was possible to see the dislocations inside the pediatric units; however, in both cases, there are an overburden of flows in some passageways, which may generate obstructions and unwilling intersections. All in all, the organization does not offer risk of contamination and encourages privacy and socialization, besides shorter distances for users to cover.

The wayfinding at the Chinese hospital is outstanding, with its great colorful front marquee and the remarkable ceiling height. At the American hospital, the wayfinding might not be as defined in the outside, however, inside it stands out by its organization and sectorization, reducing the number of unwanted encounters.

We should also consider the cultural differences between both buildings as well as the difference in usage, since Lurie has been operating since 2012 and has already gone through some structural changes, while Suzhou exists just as an architecture project.

5. Conclusions

The development of such research has revealed the functional aspects relevant to the comfort of the environments in the case studies analyzed. New researches regarding similar buildings and with the inclusion of the opinion of users would endorse and expand the content presented here, enabling the constitution of a more refined database that, once shared, could further the steady advancement of the quality of new projects or put them in conformity to the needs of the new technological innovations available in the healthcare area.

References

- Ann & Robert H. Lurie Children's Hospital of Chicago / ZGF Architects + Solomon Cordwell Buenz + Anderson Mikos Architects 14 Jan 2019. ArchDaily. Acesso dia 06/04/2019. <<https://www.archdaily.com/909319/ann-and-robert-h-lurie-childrens-hospital-of-chicago-zgf-architects-plus-scb-architects-plus-anderson-mikos-architects/>> ISSN 0719-8884
- ANN & ROBERT H. LURIE CHILDREN'S HOSPITAL OF CHICAGO, 2019. Available at: <<https://www.luriechildrens.org>>. Access on 15 April 2019
- Corpo de Bombeiros. Instrução Técnica nº 11/2015 - Saídas de emergência. São Paulo. 2015.
- ISO 6241:1984 Performance standards in building -- Principles for their preparation and factors to be considered
- PREISER, W. F. E. Abstract: Design and Health. International Academy for Design and Health. 2003
- Sebastian Jordana. "Suzhou Children's Hospital / HKS" 31 Jan 2011. ArchDaily. Acesso 06/04/2019. <<https://www.archdaily.com/108031/suzhou-childrens-hospital-hks/>> ISSN 0719-8884
- THOMAZONI, A.D.L; ORSTEIN, S.O.. Avaliação Pós-Ocupação em hospitais complexos. In: ENCONTRO NACIONAL DE TECNOLOGIA DO AMBIENTE CONSTRUÍDO, 16., 2016. São Paulo. Anais, São Paulo: ENTAC, 2016.
- THOMAZONI, Andrea D. L.; ORSTEIN, S. W. O processo de projetos de centros de diagnóstico por imagem sob o ponto de vista da análise dos fluxos. In: VI Congresso Brasileiro para o Desenvolvimento do Edifício Hospitalar. Anais (CD-ROM). Florianópolis, Santa Catarina, 2014, p. 103 - 108.
- ULRICH, R.S. Effects of gardens on health outcomes: Theory and research. In: COOPERMARCUS, C.; BARNES, M. Healing gardens: therapeutic benefits and design recommendations. New York: John Wiley, 1999.
- WANG, Zhe; PUKSZTA, Michael; PETZOLDT, Natalie R.; CAYTON, Jennifer H. Cancer Treatment Environments: From pre-design research to post-occupancy evaluation. In: World Health Design, p. 68 - 74. Available at: <https://www.healthdesign.org/sites/default/files/cancercaredesign.pdf>

ZGF ARCHITECTS, 2019. Available at: < <https://www.zgf.com/project/lurie-childrens/>>. Access on 15 April 2019.

About the authors

João Pedro S. Nozela

Architect and Town Planner, joaopedronozela@outlook.com. Special student at Faculdade de Engenharia Civil, Arquitetura e Urbanismo, Universidade Estadual de Campinas, Rua Carlos Gobbi, 190 - Jaguariúna/SP - CEP 13919-414.

Andrea D. Leitner

PhD, Professor, Architect and Town Planner, andrealeitner@terra.com.br. Faculdade de Engenharia Civil, Arquitetura e Urbanismo, Universidade Estadual de Campinas, Rua Saturnino de Brito, 224, Cidade Universitária, Campinas/SP - CEP 13083-889.

Silvia A. M. G. Pina

Associate Professor, Architect and Town Planner, smikami@fec.unicamp.br. Faculdade de Engenharia Civil, Arquitetura e Urbanismo, Universidade Estadual de Campinas, Rua Saturnino de Brito, 224, Cidade Universitária, Campinas/SP - CEP 13083-889.

“Casinha”: The story of the Birth Center in Rio de Janeiro that became a model for humanized labor and resistance to the hardships of public management

Author:

Cristiane Neves da Silva

ABSTRACT

This article is part of a doctorate thesis presented to Universidade Federal do Rio de Janeiro Post-Graduation Program in Architecture. It covers a study regarding the ambience and its qualification over the spaces dedicated to healthcare. In this scope, the author discusses the humanization of labor and childbirth and how the sensitive attributes of the ambience influence the perception of patients over health environment and the results from healthcare itself. The findings are shown with a case study carried out at David Capistrano Filho Birth Center, the only public Birth Center in the city of Rio de Janeiro, a model of excellence in humanized labor and childcare. The Birth Center is also reference to the design of qualified ambiances for labor and childbirth.

KEYWORDS

Ambience; Ambience at healthcare facilities; Birth Center

Introduction

This article is part of the thesis presented by the author to PROARQ / FAU/ UFRJ to obtain the PhD in Architecture [1]. The thesis investigates the environment in birth centers, with specific focus on normal delivery centers, observing the sensitive aspects that impact and influence the perception and subjectivity of the users in such environments. The author used qualitative and quantitative research methodologies in two case studies, both in normal delivery centers in the city of Rio de Janeiro. One of them, the David Capistrano Filho Birth Center, is presented as a model due to its role in the movement to humanize childbirth and in this city and the results found during its evaluation as part of the case study. “Birthplaces” (BITENCOURT, 2007), within the structure of healthcare facilities, can be regarded as places where patients go to not looking for a diagnosis - after all, as the popular saying goes: “pregnancy is not a disease” - but mainly assistance, care and attention to safely birth their children. In contrast to the inherent negative feelings usually triggered inside the hospital environment, such as fear and vulnerability, they are positively associated with the arrival of life, or should be, since this is not the reality found in most public institutions intended for childbirth in Rio de Janeiro.

The spaces intended for labor and birth, in their formal and physical configuration established for Birth Centers inside hospitals, cannot meet the needs of users with regard to providing environments that invoke privacy, identity, appropriation, safety and control, among others that guide and change the experiences and personal impressions each woman has of such environments. It is precisely in this context that David Capistrano Filho Birth House – or “Casinha” – stands out, for achieving results that prove it can be an excellent example of how to plan, design, build and care for a “birth environment”. One that satisfies nearly every expectation concerning the environment and makes clear the need for elements that go beyond the physical composition, involving resources, planning, differentiated work methodology, empathy, team training, education and information, among others that, together and in an appropriate physical structure, lead to very positive experiences for those who experience such work, enjoy the interaction, the power of being in charge and the positive experience of childbirth for women and their families.

1. Birthplaces: in search for the human dimension

The institutionalization of humanized care for women, advocated by the Ministry of Health, aims to guarantee pregnant women access to decent and high-quality care during pregnancy, labor and puerperium. (BRAZIL, 2000)

The humanization of childbirth movement in Brazil was encouraged by experiences that have been carried out throughout various states since the 1970s as well as by professionals inspired by practices used by former midwives or even the indigenous tribes of the country. In the 1980s we saw the creation of many groups that not only offered humanized care for pregnancy and childbirth, but also proposed changes for such practices. These movements support, promote and demand humanized childbirth care in all its stages, beginning at empowering women and emphasizing the mother/baby unit and evidence-based medicine. Among their goals, we can enlist: the end of medical interventions used just at the convenience of one or both parties (physician and patient) or the hospital; the respect for each woman’s particularities and preferences for the moment of her labor; the redefinition of human relations in healthcare; the understanding of labor as a sacred moment and therefore deserving of reverence (DINIZ, 2005).

Regarding architecture, the humanization of childbirth brings two fundamental aspects: the first is establishing that healthcare facilities are accountable for receiving with dignity the woman, her family members and the newborn, which requires, besides changing the care provided by doctors and other health professionals, an intervention in the physical organization, in order to create a receptive and welcoming environment. The second item foresees the adoption of measures and procedures known to be beneficial for monitoring the labor and birth (DINIZ, 2005), which includes thinking about the spaces intended for childbirth. When considering the role of architecture, it is up to this area of expertise to find ways to give back to childbirth the familiar, welcoming and familiar environment that

medicalization disrupted and transformed into the cold, controlled hospital environment that can be perceived as an “impersonal and unknown” place, giving rise to situations that range from discomfort and coldness (COELHO, 2003) to loneliness and depression.

The architecture projects for labor and childbirth have been reviewed and reappraised over the past decades, along with other issues related to obstetric care practices in Brazil, with great encouragement of institutional programs, through standard rules, manuals and specific guidebooks that outline proposals for the qualification and humanization of the physical structure in the spaces of birth.

1.1. Birth Centers

Labor is influenced by a series of physical and emotional issues that interfere with women’s feelings, involving psychological, physical, social, economic and cultural aspects. Providing an environment for childbirth that can provide parturient with the possibility of appropriation and control might also minimize the strangeness and insecurity that come from being in an unfamiliar environment that leads to illness and the fear of giving birth due to other experiences she lived or was told; and even on issues related to family culture and customs. This is precisely what the concept of ambience suggests when it establishes the relationship between the individual and the environment, observing it from a perspective guided through every relevant personal aspect: feelings, knowledge, culture, expectations, fears. The subjective effects that rise from this range of sensations act on and with the perception of the environment, causing the sensitive experience lived by the subjects exposed to it.

The concept of woman-and-baby-focused care during labor has broaden, and these changes in behavior and being in charge have altered the way maternity services are thought and organized. Still, even with the many rules and recommendations in place, few changes have actually been made. When designing environments for labor, the need for security, comfort and privacy that all women have at such unique moment must be considered. It should also be considered that these sensations, as well as being satisfied or not after such an experience, are directly influenced, among other factors, by the environment where labor/childbirth took place, which could be either traumatic or satisfactory. (WALSH, 2007)

When designing environments for labor, one should consider the necessity to provide women with a sense of freedom to come and go, so they feel safe and assured, and have the right to be with their friends and family, if they wish to, providing privacy and personal control, so women can feel safe, relaxed, comfortable and in charge of their labor. These are the concepts that underlie the recommendations, norms and philosophy of the projects intended for natural birth centers[2] (SILVA, 2018b).

The strategy to implement Birth Centers in Brazil began in the late 1990s, gaining priority with the creation of “Rede Cegonha” in 2011 and becoming one of the main strategies in the context of the propositions of an innovative obstetric model for labor and childbirth (DE VICO, 2017). The Birth Centers are healthcare facilities for labors that present the usual risk and that belong to or are associate with a hospital, being located inside or outside the

institution. They are independent from the obstetric operating room, they carry out humanized care, exclusive normal delivery without dystocia[3] and privilege women's privacy, dignity and autonomy by enabling them to give birth in a more welcoming and comfortable environment, where they can have be with whoever they choose to be.

Birth Centers are facilities planned and equipped with elements to enable women to go through an active and participatory labor, using practices that set them apart from the traditional obstetric care of the last decades and following the World Health Organization recommendations 1996 (AX AND SQUARE, 2006). The Birth Centers were created with the goal of "giving pregnant woman the opportunity to exert their rights regarding privacy and dignity" (MACHADO E PRAÇA, 2006), allowing her to give birth under conditions similar to those she would find at home without, however, giving up access to technological resources in case of any complications during labor.

The healthcare model found at Birth Centers minimizes the hierarchization in patient/health professional relationship, includes the family in the childbirth process, granting the mother-to-be the right to have someone by her side throughout the process, and aims at making the moment of childbirth as pleasant and safe as possible (SILVA, 2015). To meet such needs, the physical space intended for childbirth had to undergo changes, investing the architect plan of Birth Centers with fundamental importance to fulfill the role and goals of healthcare facilities. It is necessary for the architect to scale, during the design process, the implications of the relationship between the environment and its users, as well as the issues related to humanization and ergonomics.

1.1.1. Relationship with the attributes of the environment: Design and practice

There are numerous issues that interfere with women's feelings during labor, which may even influence its progress and conditions, issues that involve the physical and emotional aspects of childbirth itself, but may also include psychological, physical, social, economic and cultural aspects. Considering such issues from the perspective of projects for environments intended for childbirth, even more so if dealing with Birth Centers, it becomes more important to ascertain which physical elements of these environments can be related to the attributes of ambiances when trying to qualify the project and the environment for childbirth.

The set of feelings aroused by the material and immaterial elements, which identify the way each one perceives the spaces, characterizes the ambience of each one of them. The ambience expresses the material and moral atmospheres that permeate and involve sensations related, for example, to light, sound and temperature of the environment (AMPHOUX, 2004 quoted in SILVA, 2018b), as well as sensations related to privacy, identity, control, security, territoriality, among others. Ambience studies do not simply consider the composition of space, but its interrelationship with the sensitive experience that is brought about by the people who inhabit it (SILVA, 2018a). For this study, the author observed attributes concerning the following items:

- **Reception and welcoming (front desk):** The front desk is the first place where the woman and her family should feel welcomed upon arriving at the maternity clinic. It is the gateway to the place that is intended to provide the mother with confidence, help and a sense of welcome, where she can begin to feel safe from the beginning of her birth process. It is also where sheltering starts and, therefore, it is of paramount importance that the process of humanization and qualification of the environment begins there too.
The proper reception of women and their caregivers, considering all these aspects, contributes to the establishment of a bond of trust and security, helping in the tranquility of the pregnant woman and her role in labor.
- **Normal Labor Room:** One of the main spaces that characterize a Birth Center is precisely the Normal Labor Room, intended for carrying out pre-labor, labor and after labor procedures. The ruling RDC 36/2008 describes them as "a unique and reserved environment for monitoring and conducting labor, delivery and observation of women and their newborn in the first hour of life". Bringing together all the procedures related to the stages of childbirth in one environment is intended to prevent the transfer of women in labor from one environment to another, and to provide women, their babies and their caregivers with a quiet and reserved place also in the period after childbirth, even if during the minimum period established. In Birth Centers, women stay in the rooms since pre-labor until mother and baby are discharged. These rooms, in general, are designed to recreate a residential, familiar and completely different configuration from the traditional operating rooms, giving the patient feelings of comfort, well-being and confidence. These are places where women can experience childbirth assisted by familiar caregivers or friends who can provide ongoing care. Women receive help to become confident and optimistic in private, sacred and safe spaces (WALSH, 2007).
- **Aspects related to culture and the issue of companions:** It is necessary to observe other aspects related to birth spaces that can generate different perceptions of the environment according to the cultural aspects that involve the individuals, since, from a symbolic point of view, the environment and its components are related to the cultural and social codes that are human. People live, not only incorporating, but also reproducing countless meanings related to the architecture spaces and their functions (SILVA, 2018 a). In this regard, it is essential to consider not only the mother and the baby, but also those chosen by her to be by her side during that period of personal, family and social transition represented by the birth and the arrival of this new person to the interaction of all.

Even considering pregnancy and childbirth as normal and physiological aspects of a woman's life, each one experiences it as a special and different moment, with unique experiences that include sudden physical, emotional, social and family changes, shared with family, friends and groups to which she belongs. Allowing her the freedom to choose whoever she wants to be by her side during reception, labor, childbirth and immediate after childbirth, besides being her right, is also one of the prerogatives directly related to the fulfillment of these desired conditions of comfort, tranquility and safety in the process of labor and childbirth. Even with laws and countless researches that indicate the benefits of having someone with the woman during childbirth, the percentage of pregnant women who go through this moment without someone of their choice, either for not knowing their rights

or for being forced by the healthcare team, in public and private healthcare facilities, still reaches significant levels (FERREIRA AND MADEIRA, 2016; RODRIGUEZ ET AL, 2017).

The presence of a companion during the birth process is a practice that favors safety, quality of care and humanization of care; besides incorporating and being in compliance with SUS (Brazilian National Health System) policies on integrality, universality and equity in women's health care. It can be expected from its complete implementation positive changes: for women, increased sense of security and support, respect, comfort and bonding with their family and social network; for the staff, an encouragement to change the paradigms regarding the established obstetric practices and to embrace new ways of thinking about care and health management practices (PEACE and FENSTERSEIFER, 2011; DINIZ ET AL, 2014).

2. David Capistrano Filho Birth Center, also known as “Casinha”

David Capistrano Filho Birth Center opened on March 08, 2004 by the Rio de Janeiro Municipal Health Department. It is established in Realengo neighborhood, on the west. The Birth Center or “Casinha”, as it is called by its users, has 374.50 m² of built area and is located in an extremely vulnerable area of the city that lacks basic assistance resources. Still, it is of fundamental importance as a reference for prenatal care and natural childbirth in this region and the surrounding area (AZEVEDO, 2008).

2.1. Implementation

The implementation of this Birth Center, the only one of its kind in the city until the present day, is a direct result of discussions about the medicalization of childbirth and the excess of interventions that it underwent, which increased in Brazil in the eighties with the promotion of forums for discussion that mobilized society, professionals and the academic environment involved in questions about the qualification of obstetric care in the country. These debates and movements have encouraged various governmental actions in the search for the humanization of childbirth, such as the insertion of obstetric nurses in labors, qualification of this professional



Illustration 1 – David Capistrano Filho Birth Center/RJ

Photo credit: Adriana Medeiros (2018)

category, the limitation of the number of cesarean sections performed through SUS (PEREIRA ET AL., 2012), as well as the concern with the qualification of the space destined for labor and birth.

Even with the motivation to qualify and humanize childbirth, having obstetric nurses inside municipal childbirth centers repeats the historical questioning about the qualification and the need for "medical knowledge" to the detriment of nurse knowledge and performance to conduct and assist women throughout the process. Besides the professional competence of obstetric nurses, they call into question practices regarding the humanization of care, such as ambulation, the use of balls, waterbirth, the use of other birthing positions, besides the traditional lying down, the restriction of episiotomy[4] and other unnecessary interventions (PEREIRA ET AL., 2012). In this context of actions and discussions on actions for the humanization of childbirth, SUS Birth Centers were also established in the country through the Ordinance / GM No. 985/1999, enabling their implementation in municipal health systems.

Even if officially established by this first Ordinance of the Ministry of Health as an ideal healthcare facility aimed at carrying out normal births, the establishment of the Birth Center in Rio de Janeiro had neither a quick nor an easy story. The initiative of the Municipal Health Secretariat - SMS / RJ came after the opening of Sapopemba Birth Center (SP), by David Capistrano[5] who, in 1999, coordinated the regulation and implementation of this type of health unit within the SUS. The David Capistrano Birth Center is the third of its kind in the country before the creation of any regulation for it.

A Casa de Parto David Capistrano Filho, inaugurada em 08 de maio David Capistrano Filho Birth Center, opened on March 8, 2004, has been through countless conflicts resulting from disputes between the favorable and unfavorable segments of this type of assistance, even involving actions in the Public Prosecution Service (PEREIRA ET AL., 2012). They ranged from lawsuits filed by CREMERJ (Rio de Janeiro Regional Medical Council), with questions about the "illegality of services" due to the absence of doctors in the service (PEREIRA E MOURA, 2009), and prohibitions by the State Health Surveillance for lack of a license that the regulatory agency itself had not issued because it did not recognize the new health facility model.

Through each one of these hurdles, it was crucial to rely on the great mobilization of entities that advocate for humanized childbirth and women's right to choose the place and the most appropriate form to have their children, if there are no complications. This mobilization eventually prevailed, and the Sanitary Surveillance Superintendence granted the Birth Center the right to operate in November 2009 (PEREIRA et al., 2012).

2.2. Project and implementation

An initial difficulty faced in the conception of the Birth Center concerned the distribution of spaces, since there were no established guidelines for the design of this new typology of environment for childbirth. The main direction that guided the project for Rio de Janeiro's Birth Center was the search for domesticity, that is, references that refer to the safe space of the home. And the result was a Birth Center that did not have "the mirror of the hospital

delivery unit under any circumstances” (BITENCOURT AND COSTEIRA, 2018). In addition to the issues regarding the need to develop a new model for the facility intended for normal birth in the city, there was also great pressure against the implementation of this new model.

Architect Iva Rosa Copedé, from SMS / RJ, was responsible for the project with the guidance and collaboration from Fábio Bitencourt. Their starting point was a symbol used to represent both SUS and healthcare: a cross (Illustration 2). From this cross, wards were created and from these, the ideas of how to house the assistance to be provided would be defined. According to Fábio Bitencourt, the conception started from an initial drawing around this cross, where wings were created (Illustration 3). From this conformation, a large area for effective assistance was created, which would be exactly the largest space (Illustration 4). The main areas that would be the basis of the building were then defined (Illustration 5) and would be subdivided into different environments (Illustration 6). Subsequently, this idea of sectorization was taking shape (Illustration 7) and combined in the final idea (Illustration 8) for the first draft of the architecture that would be developed for the birth center (BITENCOURT E COSTEIRA, 2018).

Still, there was a long way to go to find out what the necessary environments would be and how to adapt them to the current generic norms for the design of healthcare facilities intended for childbirth respecting the lines proposed by obstetric nurse professionals and by the architects involved in the project. There were still work processes and environments to be defined, such as the Normal Labor Room, which had already been named, but that was still a tricky issue architects had to solve in the project.

Professionals specialized in women’s health were interested and tried to assist in the processes, since it was an idea still in progress for everyone. There was no architecture guideline established as there is today. The first legislation with ruling close to the current standards, the RDC 36, would not come into force until 2008, almost a decade later. Therefore, each part of the birth center was conceived as a novelty, designed according to the activities that were emerging and the needs that were gradually being guessed by the professionals involved in the conception.

The environments were designed and created from the main entrance: there should be rooms for mother’s activities, a breastfeeding plan, a plan for women who had already been through a normal birth; toilets; a room where parties and meetings could be held, considering the large outdoor space; a reception; a gynecology office with attached bathroom and a room for the administration of the house. The two “modules besides the cross” would concentrate services and logistical support on one side; on the other side, there would be an area to enter and exit the center, as well as an access to the ambulance on duty. In the service area, a purge area, a home-like laundry room, and a kitchen. Between the reception and the internal area there would be a balcony, a reception that would make the transition to the interior space, where there would be a nursing station, another room, which would be intended for curettage, gynecological procedures, attention and evaluation of women. In addition, four rooms for normal labor were also designed. One of them was later transformed into a rest area for the nurses. In the central area, a nursing station / prescription area would be located. The environments were designed and created from the main entrance: there

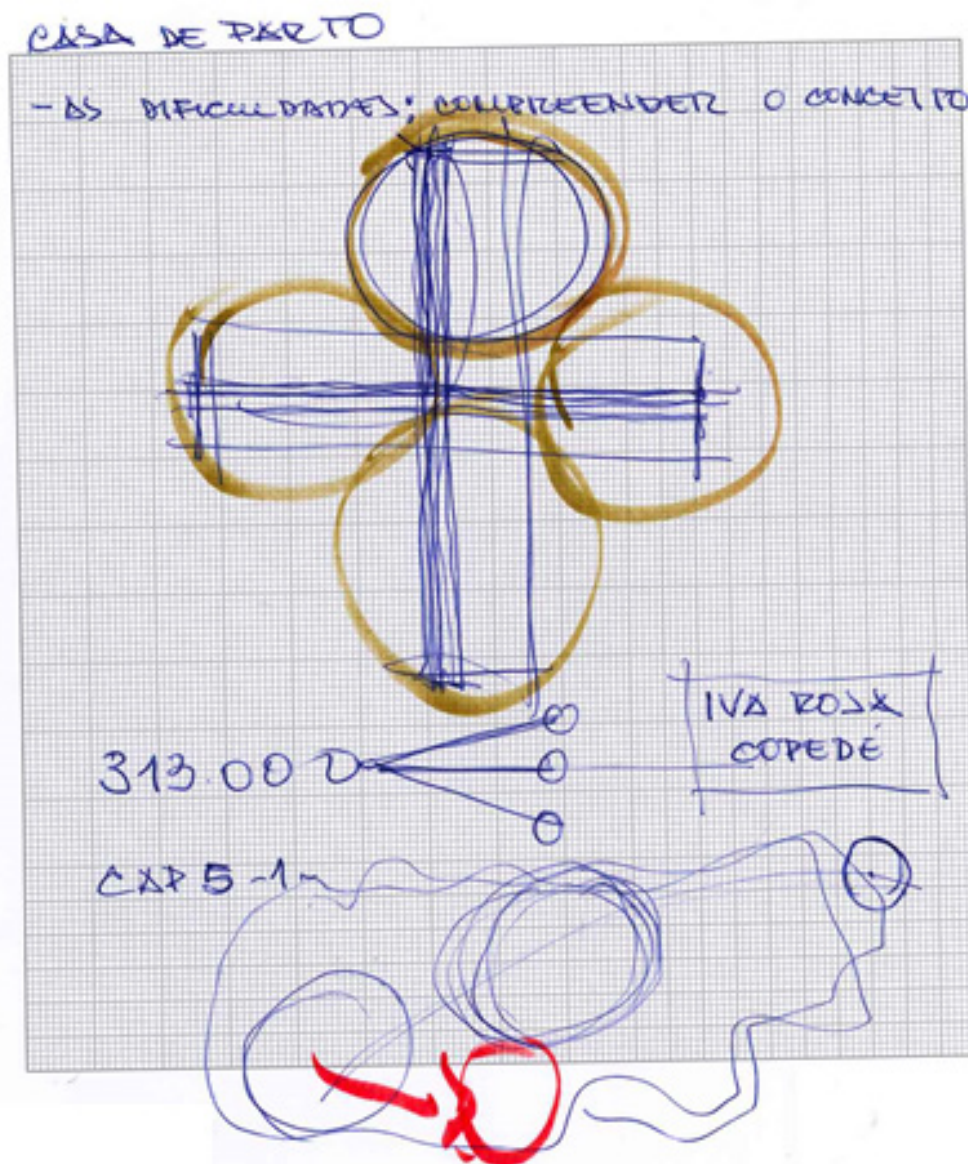


Illustration 2 – First items intended for the elaboration of the concept of Rio de Janeiro's Birth Center: architecture concept, financial availability and location.
Source: Fabio Bitencourt's drawing (2018)

should be rooms for mother's activities, a breastfeeding plan, a plan for women who had already been through a normal birth; toilets; a room where parties and meetings could be held, considering the large outdoor space; a reception; a gynecology office with attached bathroom and a room for the administration of the house. The two "modules besides the cross" would concentrate services and logistical support on one side; on the other side, there would be an area to enter and exit the center, as well as an access to the ambulance on duty. In the service area, a purge area, a home-like laundry room, and a kitchen. Between the reception and the internal area there would be a balcony, a reception that would make the transition to the interior space, where there would be a nursing station, another room, which would be intended for curettage, gynecological procedures, attention and evaluation of women. In addition, four rooms for normal labor were also designed. One of them was later transformed into a rest area for the nurses. In the central area, a nursing station / prescription area would be located.

Each one of these environments, as well as their interconnections, moves towards an architecture design defined as two great intersecting axes and are complimented until they become the blocks conceived by the

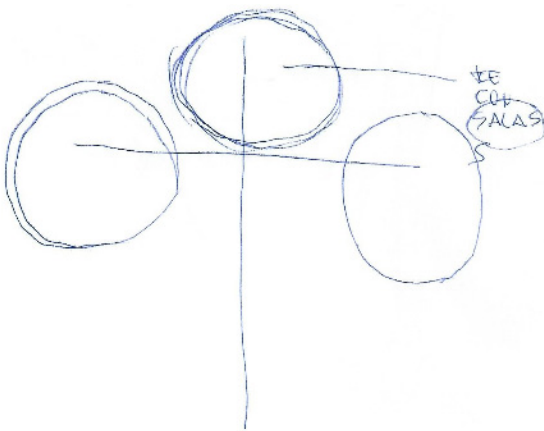


Illustration 3



Illustration 4



Illustration 5

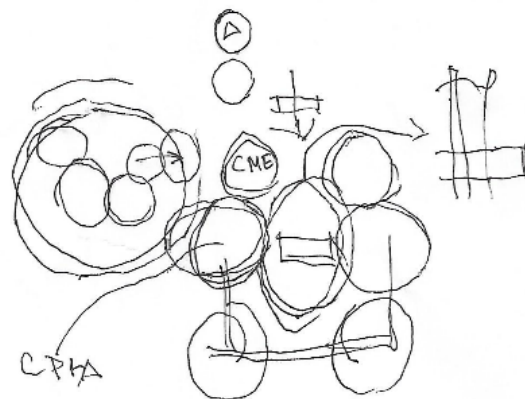


Illustration 6

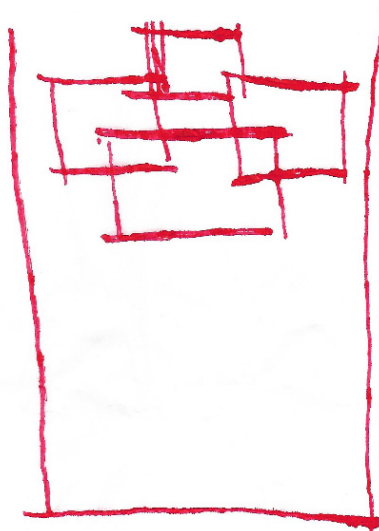


Illustration 7

Illustrations 3 to 7 – Initial
Conceptual Planning
Process for the Birth Center
Source: Adapted from Fabio
Bitencourt's drawing (2018)

architects: the central blocks, which receive the effective assistance (the rooms, the front desk, the nursing station and the prescription area); the side blocks, which serve the service area and the alternative entrance and exit for patients and ambulance personnel; and the front area, intended for front desk, welcoming, events, meetings and administration. It is according to the distribution of these uses and the processes inserted in them that the architecture takes shape, adapting to the size of the land available for implementation.

The final composition of the project is a very simple structure, complete with an office, a meeting room for educational groups (still called a utility room), a waiting room, a nursing station, a delivery room or a care room that could function as office, three admission suites, board room, laundry room, storage room for consumables and kitchen and solarium in the central area. Outside, there were the parking lot and the patio. The house received “a soft-toned ambiance, wicker furniture, colorful pillows, pictures of women and children in activities in the unit itself, making the environment very welcoming” (AZEVEDO, 2008).

In addition to the physical and structural configuration of the building, the “atmosphere of domesticity” initially sought and that guided the architecture program for the Birth Center is intensified by the planned and installed

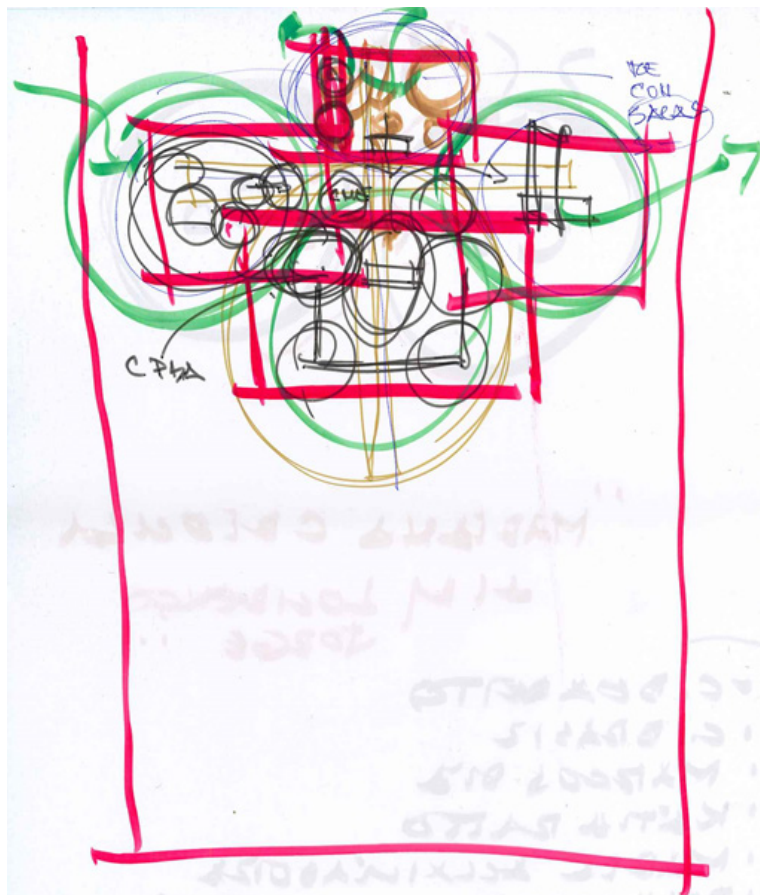


Illustration 8 – Final draw of the conceptual planning for the Birth Center
Source: Fabio Bitencourt's drawing (2018)

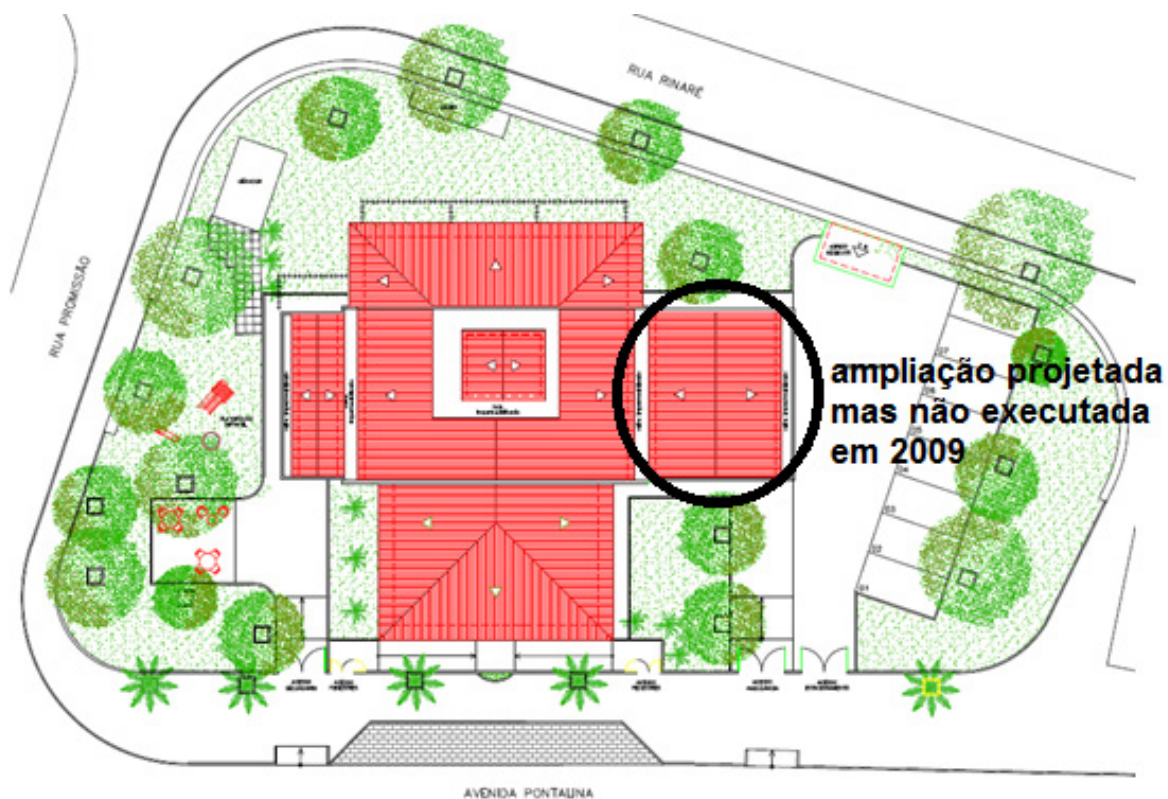


Illustration 09 – Implementation – David Capistrano Filho Birth Center – Renovation Project – 2009
Source: SMSDC / RJ



Illustration 10 – David Capistrano Filho Birth Center's current layout
Source: Cristiane N. Silva as-built, 2018.

ambience, with pink and salmon interior and exterior painting; furnishings reminiscent of a homey atmosphere starting at the front desk all the way to the labor rooms, including armchairs, pillows, double beds, among other objects that can be found in any residence; creating recognizable and welcoming environments for the “clients”, their families and everyone else who occupy the center. These characteristics remain virtually unchanged to the present day, after fifteen years of operation. Even though the current need of the Center to receive care is noticeable, such as repainting; correction of capillary infiltrations common in surrounding areas; lawn mowing and various repairs to the physical structure, which catches the eye as soon as you enter the reception area is the atmosphere of the place, which welcomes, nurses and makes all visitors feel at home.

2.3. Reference Assistance Facility

Since this is a Birth Center independent from any hospital facility, it relies on Mariska Ribeiro Women’s Hospital, in Bangu neighborhood, as a reference center in case of emergencies. The referral hospital is roughly five kilometers away from the Birth Center, a distance traveled by ambulance, with the siren on, within approximately ten to fifteen minutes during the worst rush hour.

This Birth Center offers mothers prenatal care during all stages of pregnancy, achieving as main results not only a better monitoring of the pregnant woman’s condition, aiming at the normal delivery, but also the “prior knowledge of the mother and her family, her social, emotional and biological situation, the possibility of bonding with the professionals and the unit” (AZEVEDO, 2008).

The Birth Center principles are: offering “a safe and pleasant space for women and families who wish for (...) a natural childbirth with a minimum of interventions, active participation of women, the right to listen, verbal and bodily manifestations”, besides deconstructing the current medicalized model of childbirth, in return to a physiological and feminine moment, in an “emancipating, polemic and counter hegemonic” model (CPDCF, 2018).

Due to its characteristics and background, the Birth Center receives only minimum-risk pregnant women, serving not only the women in their area of coverage, but all of those who fall outside the limits imposed for the safety of women and their babies. Until 2019, the Birth Center have delivered 3,260 babies with no maternal mortality and only two cases of complications with newborn infants who were referred to and assisted at the referral hospital.

3. David Capistrano Filho Birth Center – User Assessment

The research that inspired this article was based on the evaluation of aspects of the ambience found at birth centers analyzed in order to verify possibilities of detecting factors that could effectively interfere and influence the perception and experience of these environments by their users. The comparative table (Table 1) shows the association between the attributes of the environment considered in the forms of the qualitative tool - Aspect - in the booklet of the Institutional Environment and the attributes considered by the researcher for the study:

Aspects assessed:	Related Aspects	
	Ambiance Manual	Aspects assessed during research
Privacy, companionship and dignity	Comfort	Personal space; Control; Appropriation and identity; Privacy; Territoriality; Perception of the environment; Culture
Outside view	Comfort; Space x Work process	Control; Perception of the environment; Culture
Nature and open air	Comfort	Control; Perception of the environment; Culture
Comfort and control	Comfort; Space x Work process	Personal space; Control; Appropriation and identity; Privacy; Territoriality; Perception of the environment; Culture
The legibility of the center	Comfort; Space x Work process	Control; Perception of the environment; Culture
Inside aspect	Comfort; Space x Work process; Appropriation x Knowledge x Experience	Personal space; Appropriation and identity; Perception of the environment; Culture
Facilities	Comfort	Perception of the environment; Culture
Employee evaluation	Comfort; Space x Work process; Appropriation x Knowledge x Experience	Personal space; Control; Appropriation and identity; Privacy; Territoriality; Perception of the environment; Culture
Accesses	Comfort	Control; Appropriation and identity; Culture

Table 1 – Index of items listed in forms x Ambiance Manual x attributes considered for the research.
Source: Cristiane N. Silva

Table 2 presents the individual grades assigned to each of the items in Aspect tool assessment forms, according to the opinion of each participant about the Birth Center.

Most of aspects assessed received similar grades/evaluations from almost all respondents. Overall, the ratings are positive. The results were also evaluated, by way of verification, by the standard deviation calculation, with very similar results. The items assessed were as followed:

- **Privacy, companionship and dignity:** Patients, caregivers, and staff acknowledge that this is fully fulfilled by the physical facilities designed for the Birth Center. This item is directly related to the comfort conditions, focusing on the privacy and individuality of users. Questions regarding the delimitation of personal space, control and privacy are directly answered by the existence and use of the Normal Labor Rooms. These environments allow “clients” the opportunity to obtain an individualized and comfortable space, equipped with appliances

Aspects	Average	Average + SD	Average -SD
Privacy, companionship and dignity	5,95	6,08	5,82
Outside view	4,89	5,55	4,24
Nature and open air	5,33	5,95	4,70
Comfort and control	5,71	5,98	5,45
The legibility of the center	5,59	6,05	5,13
Inside aspect	5,32	5,83	4,81
Facilities	4,38	5,64	3,12
Employee evaluation	4,96	5,22	4,70
Accesses	4,23	5,11	3,35

Original Legend	Grade
Totally agree	6
Strongly agree	5
Fair statement	4
Partly agree	3
Hard to agree	2
Completely disagree	1
Impossible to grade	0

Table 2 - Summary of results by category - Birth Center
Source: Cristiane N. Silva

designed to give women the choice and control over almost every aspect of their labor process and stay. The Normal Labor Room, as used in the Birth Center, also provides the choice of whether or not to relate to people outside the family circle and friends, which does not exist in a shared ward, and primarily the relationship between the family and the newborn member.

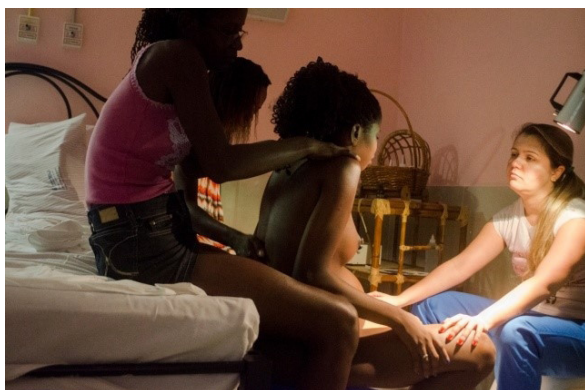


Illustration 11 – Patients, caregivers and professionals – Delivery and post-childbirth in the Normal Labor Room.
Photo credit: Adriana Medeiros (2018)

Also regarding control, a primary aspect to be mentioned is that, whenever possible, all the determinations and desires established by the woman in her birth plan[6] are followed at will, as long as they do not imply risk to the mother or the baby. The issues of appropriation, identity and territoriality permeate the use of Normal Labor Rooms, but are also greatly influenced by the homely atmosphere and the general appearance of the Birth Center, which refer directly to recognizable and welcoming environments, offering a sense of security completely different from the ones we have contact with in an environment with imminently hospital characteristics.

These issues are also directly linked to the empathy bonds created during prenatal care, through group meetings aimed at clarifying issues related to pregnancy, childbirth and baby care, in which pregnant women participate. These meetings also contribute to the knowledge and recognition among professionals, patients, family and the environment of the Birth Center,

establishing bonds and appropriation, giving meaning to the spaces and making them a “place” for all its visitors, who affectionately call it “Casinha”.

The last two items considered, environmental perception and culture, permeate all the others and, in relation to the Birthing Center, are influenced by them, giving the others the same influence. Environmental perception is influenced not only by the physical and compositional aspects of environments - such as shape, colors, furniture typology, the use of walls as murals to express clients’ expectations - but also by guidelines on women’s rights and the smell of a cake baking in the kitchen that is felt all the way through the front desk.



Illustration 12 - Group meetings and bonding - Birth Center
Photo credit: Adriana Medeiros (2018)

Everything at the Birth Center welcomes you. Such welcoming, combined with the feeling of having privacy and control, having personal references, being surrounded by the people of your choice, and the differentiated care treatment, are fundamental, according to the testimony of some patients, to bring the feeling of security and comfort regarding the childbirth, minimizing the fears and concerns brought about from other women’s stories or past experiences.

- **Outside view:** Patients, caregivers and staff agree that this is fully fulfilled by the Birth Center. The Birth Center offers clients and staff ample access to the outdoor landscape through the windows in the rooms and offices, as well as the doors that are always open to the gardens, even if they lack the necessary maintenance. Natural light is also present, passing through windows, open doors, glass bricks and skylights. The circulation outdoors is unrestrainable, further facilitating access to these areas.
- **Nature and open air:** Patients, caregivers and staff agree that this is fully fulfilled by the Birth Center. This item interferes with aspects related to environmental control and perception. Control is given precisely by the possibility of unrestricted circulation and access to all environments, allowing customers and employees to look at environments where they stay for several hours at a time, if they wish.
Despite the expressive evaluation, it is worth consider that although the possibility to access and contemplate the outdoor area, it is little visited and noticed, especially by customers, who generally prefer to stay in the rooms. That can be mainly caused by: the extreme heat, common in the

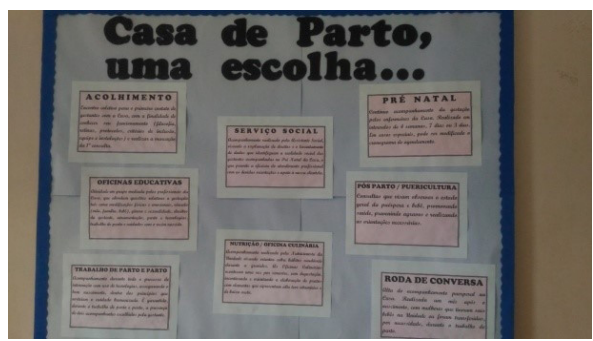
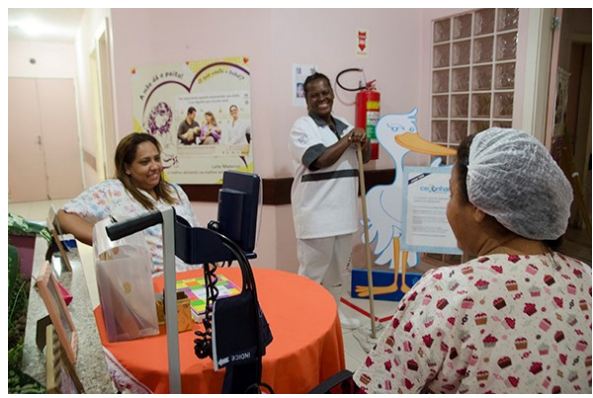


Illustration 13 - Welcoming, atmosphere, ambience - Birth Center
Photo credit: Adriana Medeiros (2018)

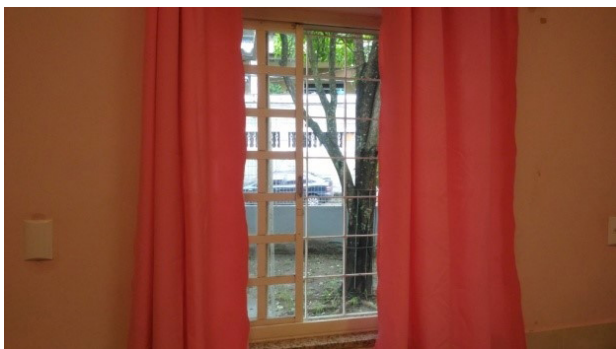


Illustration 14 - Outside view and natural light
Photo credit: Cristiane N. Silva (2018)



Illustration 15 - Outdoor area - Gardens - Birth Center
Photo credit: Cristiane N. Silva (2018)

neighborhood; the lack of a better maintenance of the gardens; the lack of equipment that could provide comfort and protection to customers would enjoy the outdoor space, both against the sun and the sight of those who pass on the streets surrounding the Birth Center.

- **Comfort and Control:** Patients, caregivers and staff agree that this is fully fulfilled by the Birth Center. The possibility of being in a private space during admission is a crucial item regarding the clients' appropriation over their personal space, enabling actions that would be impossible in shared wards and acting in the appropriation of the space and the maintenance of the identity. Families can bring personal items to display and use during their stay and have alternatives to regulate the incidence of lighting. One of the main items about the feeling of comfort and control provided to women refers to the possibility of giving birth the way they wanted, in a familiar environment and with personal references, using the method and position they chose, whenever possible.
- **The legibility of the center:** Patients, caregivers and staff agree that this is fully fulfilled by the Birth Center. This item mainly relates to environmental control and perception, both referring mainly to the possibility of decision-making and the security of the environment in which individuals find themselves, how they can act, transit, enter or leave, locate themselves and obtain information on procedures, processes and essential rights for the typology of care performed there. The possibility of legibility of the place also brings with it a sense of security, arising from the knowledge and appropriation of spaces.
- **Inside aspect:** Patients, caregivers and staff agree that this is fully fulfilled by the Birth Center. It relates mainly to personal space, appropriation and identity, environmental perception and culture. As this is an aspect whose interpretation is most profoundly influenced by personal taste, experience, history, and preferences, it could have received more divergent assessments, nonetheless, with rare exceptions, it received a score below five points, even considering the obvious needs of maintenance perceived in almost every room. Although the problems regarding the visual aspect are visible and perceived by customers, visitors, and employees, they lose weight and importance in light of all the work done there and the results achieved.

The items related to the indoor aspect mention spaces that refer to home and recognizable environments, which is perfectly found in the Birth Center. These environments are kept extremely clean, the ceiling fans help drift temperatures in areas without air conditioning. Open doors and windows give the feeling of lightness and airiness. The existing floor, wall and ceiling coverings are not uncommon, they are the same since the inauguration and are repeated by the environments, from the pink of the walls to the ceramic tiles of the floors. There is no variety or luxury, but there is a kaleidoscope of posters, paintings with messages from previous patients, pictures with people important to the Center, the various awards received, indoor garden with plastic flowers, chairs of different materials, picture frames on tables and walls. Mobiles crafted by the nurses for some party hanging from the ceiling. There is no shortage of the diversity of cladding materials or the paint color of the walls. The indoor aspect of the Birth Center is at once all alike and



Illustration 16: Outside area - accesses and surroundings.
Photo credit: Cristiane N. Silva (2018)

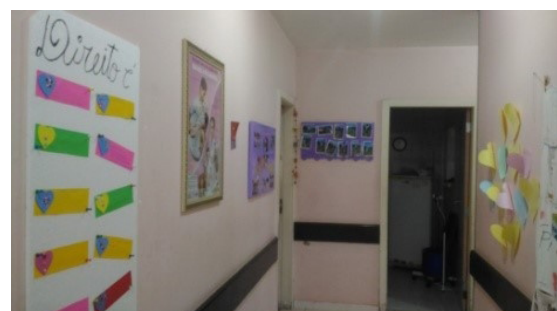
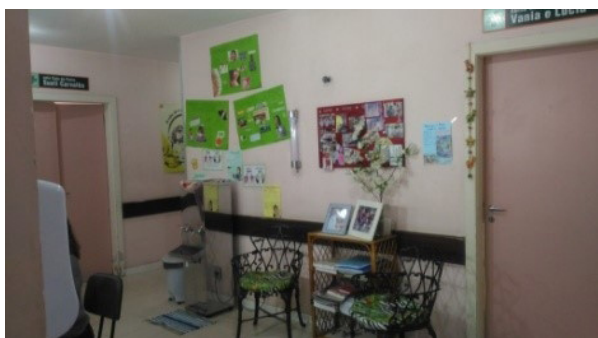
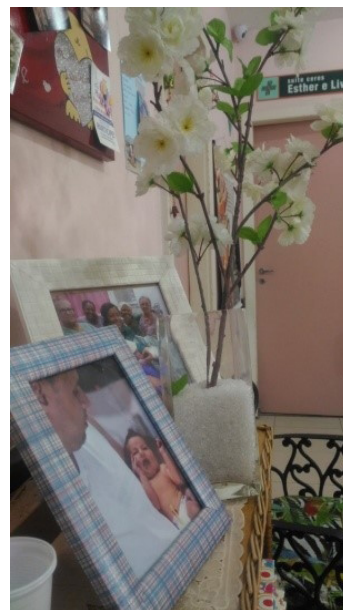
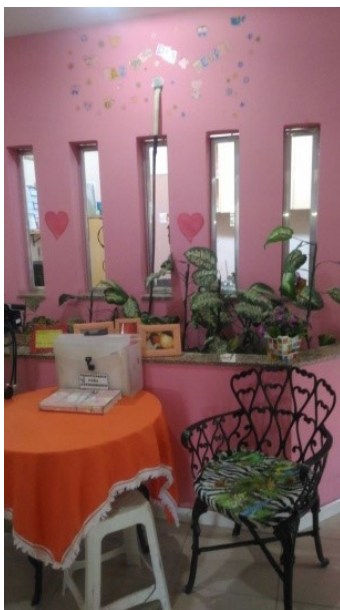


Illustration 17: Inside aspect - ambience
Photo credit: Cristiane N. Silva (2018)

completely different. It has its own identity, it is welcoming and pleases its admirers, who would like to see more attention towards preservation, but fully identify with the environments, help with its ambience and completely own that place.

- **Facilities:** Patients, caregivers and staff recognize that, even though the Birth Center fulfills this aspect satisfactorily, there is still some need for improvement. This item covers the general amenities offered to customers and the safety and comfort conditions found in the environments, especially in the bathrooms inside Normal Labor Rooms. Most of the items listed received good grades, and we can say that the grade proportionally lower than the other aspects is mainly due to the maintenance and visual aspects of the bathrooms, where women consider giving birth in the tubs. The bathtubs do not comply with the current legislation regarding dimensions, the position in relation to the toilet makes it difficult for professionals to work at the time of delivery and the conditions of conservation bring insecurity to women, although many still choose to go through with the delivery in the water. The condition of the coating in these facilities is also very compromised, not contributing to the good perception or safety in the use of the environment.
- **Employee evaluation:** Employees recognize that, even though there are various problems to be addressed regarding their own comfort and working conditions, they feel satisfactorily met by the facilities of the Birth Center in the aspects considered. This item is directly related to their conditions of comfort, how they see the space as a facilitator of the work process and the appropriation through the application of knowledge and experience of professionals. It interferes with the related aspects, but with a vision directed exclusively to the conditions found and perceived by the multiple teams of employees. It also interferes with issues related to personal space, control and privacy of employees, observing the conditions of the environments given to these professionals.

The spaces of the Center are primarily intended to provide healthcare service, which is very good, but requires a closer look at comfort, work and equipment intended for professionals who provide services. Issues such as lack of maintenance and the need to expand some sectors at the Birth Center to better serve the public were mentioned by users who took part in the research and those who didn't, but said so in informal conversation during the visits, which was understood as the result of administrative issues and lack of funding to meet the needs of the unit, but that do not prevent the Center from providing care, even if they influence everyone's perception concerning the available working conditions.

- **Accesses:** From all the items from the evaluation forms, this was the one that received the lowest grade. The questions refer to the conditions of access, accessibility and safety of users, especially in the case of pregnant women, who may already be in labor, and families with newborn babies. They directly interfere with customers' perception of the possibility of getting to and from the site safely and easily. Besides the distance from

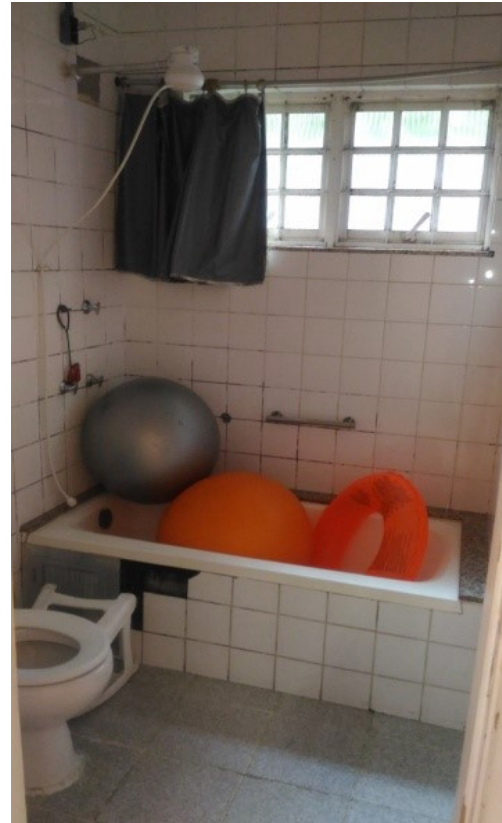
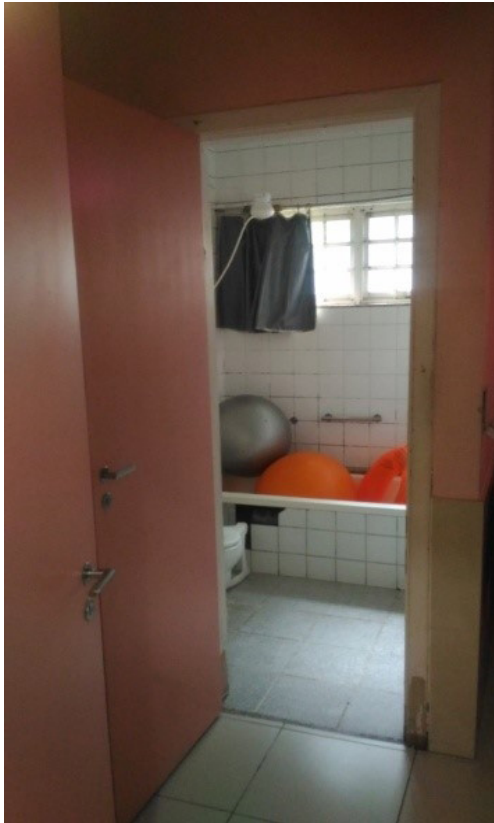


Illustration 18: Bathrooms inside the Normal Labor Room
Photo credit: Cristiane N. Silva (2018)

the main road, another fundamental issue that affects perception is the immediate surroundings of the Birth Center, with arid and very empty streets, besides the countless reports of public insecurity. The difficult access and insecurity affect not only the clients, but the professionals and service providers working in the Center.

4. Considerations regarding the “model” and the Center

The Birth Center model, represented in this study by David Capistrano Filho Birth Center, shows, through the results of the evaluations performed, that it is a synthesis of the aspects presented in the theories, recommendations and normative for environments intended for humanized birth. This opinion is shared not only by women, but also by guests and staff.

The Center also makes it clear that, despite the formal aspects that make a huge difference, the ambience does not rely only on the physical structure. In this childbirth care unit, which has a deficient physical structure, and needs not only maintenance but also expansion, the working methodology employed, the dimension of empathy assimilated, the knowledge and recognition, all working together, make a huge difference to the final result of the service provided by those who work there welcoming those looking for care.



Illustration 19 – Patient Medical Record Station
Source: Photographs provided by Adriana Medeiros (2018)

This model is not limited to the constructive and tangible aspects of built facilities, but to a composition of these with the form of care, with the familiarity generated by the protocols of information and clarification, for allowing privacy, but encouraging coexistence, to provide freedom of flow, for becoming part of the everyday life of families who seek the Center during pregnancy and after birth. The Birth Center becomes everyone's home; the birth returns to its origin and the family. Families go back to follow up on future pregnancies, children who were born there can be seen around the house, accompanying other bellies that bring new children. They join the local community, working together to help through the most difficult phases of lack of funds or marching to maintain the service, which is constantly threatened with termination, they take part in a community organization (ReParto - David Capistrano Birth Center Support Network), which comprises employees, friends and users of the Birth Center. They own and establish the territory.

The work processes and the typology of care provided at the Center result from written protocols and experiences of the healthcare team, to which many professionals belong since before the inauguration. They are the result of knowledge gathered throughout the existence of the house and the deliveries performed there and from all the experience, safety and confidence imparted by the professionals regarding the quality of the work performed. The trust invoked by the healthcare team acts alongside with the empathy and the environment, increasing the feeling of physical and emotional well-being of individuals, positively influencing the perception of the environments as a whole, in order to minimize aspects that could be perceived negatively, which would result from the maintenance difficulties currently faced by the Birth Center.

The Birth Center also meets the prerogatives of the humanization of childbirth on the need to take back the typical labor to recognizable environments resembling a home birth, but with immensely fewer possibilities of complications, due to the care provided for the women and the experience and knowledge of the obstetric nurses, capable and legally qualified for their work. It is up to us to recognize the need for a major process of change for this Birth Center model not only to be accepted, but also multiplied as an important tool for the necessary changes in the model of childbirth in the country. Therefore, it is also as important

to recognize it as an important aid in reducing maternal and neonatal mortality, which implies also changing the culture of cesarean section, by expanding information and clarification on the subject, not only to the general population, but even to managers and health professionals, who still question the safety of this type of delivery and birth care unit.

Footnotes

[1] "For sensitive environments in the birthplace. Perception and subjectivity in the normal birth centers".

[2] Normal birth is often used as a synonym for "vaginal birth". When it comes to natural childbirth, in addition to vaginal delivery, it should be emphasized that the baby is born without medical intervention, such as anesthesia, painkillers or inducing drugs.

[3] Fetal dystocia is the occurrence of fetal size or position abnormalities, resulting in difficulties in childbirth. The diagnosis is made by clinical examination, ultrasound or by response to the evolution of labor.

[4] **Episiotomy** is an incision made in the perineum to enlarge the birth canal. This is one of the main condemned interventions in the good birth practices established by the WHO (WHO, 1985).

[5] David Capistrano da Costa Filho has a PhD in public health and was a leader of the student movement. His constant participation in National Health Talks granted him national recognition for his innovative nature of thinking about health. His importance for the public health area is mainly due to his contribution to the establishment of SUS. He was responsible for the creation of the first Birth Center (AZEVEDO, 2008).

[6] The Birth Plan can be either a letter or list in which the pregnant woman determines what she would like and would not like to have at birth to ensure the quality of care and experience. Pregnant women are advised about the possible scope and limitations of requests at group meetings during prenatal care.

References:

AZEVEDO, L.G.F. Estratégias de luta das enfermeiras obstétricas para manter o modelo desmedicalizado na Casa de Parto David Capistrano Filho. Dissertação apresentada, como requisito para obtenção do título de Mestre, ao Programa de Pós-Graduação em Enfermagem da Universidade do Estado do Rio de Janeiro. 2008.

BITENCOURT, F. Arquitetura do Ambiente de Nascer: Investigação, reflexões e recomendações projetuais sobre conforto humano em centros obstétricos. Tese de doutoramento em arquitetura apresentada ao Programa de Pós-graduação em Arquitetura da faculdade de Arquitetura e Urbanismo da Universidade Federal do Rio de Janeiro - PROARQ/FAU/UFRJ. 2007.

BITENCOURT, F. e COSTEIRA, F. Entrevista. Entrevistador: Cristiane N. Silva. Rio de Janeiro - RJ, 2010. 1 arquivo .mp3 (110 min.).

BRASIL. Ministério da Saúde. Programa de assistência integral à saúde da mulher. p.7-12 2000.

_____. Regulamento Técnico para Funcionamento dos Serviços de Atenção Obstétrica e Neonatal - Resolução da Diretoria Colegiada - RDC N° 36, de 03 de junho de 2008. Agência Nacional de Vigilância Sanitária. Brasília - DF. 2008.

_____. Oficina de Ambiência para o Parto e Nascimento. Rede Cegonha. HumanizaSUS. Política Nacional de Humanização DAPES /SAS Ministério da Saúde. São Paulo - SP. 2012

COELHO, G. A arquitetura e a assistência ao parto e nascimento: Humanizando o Espaço. Dissertação de Mestrado submetida ao Programa de Pós-graduação em Arquitetura, Faculdade de Arquitetura e Urbanismo, da Universidade Federal do Rio de Janeiro - UFRJ. 2003.

CPDCF - CASA DE PARTO DAVID CAPISTRANO FILHO. Casa de Parto. Disponível em: <http://smsdc-casadeparto.blogspot.com/p/quem-somos.html>. Acesso em: junho de 2018.

DE VICO. A. F. Avaliação da Implantação dos Centros de Parto Normal no Sistema Único de Saúde. Dissertação apresentada à Pós-graduação em Saúde da Criança e da Mulher, da Fundação Oswaldo Cruz e do Instituto Nacional de Saúde da Mulher, da Criança e do Adolescente Fernandes Figueira. Rio de Janeiro - RJ. 2017

DINIZ, C.S.G. Humanização da assistência ao parto no Brasil: os muitos sentidos de um movimento Ciência e Saúde Coletiva 10(3): 627-637. 2005. Disponível em: http://bhpelopartonormal.pbh.gov.br/estudos_cientificos/arquivos/humanizacao_da_assistencia_ao_parto_no_brasil_os_muitos_sentidos_de_um_movimento.pdf. Acesso em junho de 2017

FERREIRA, K.A.; MADEIRA, L.M. O significado do acompanhante na assistência ao parto para a mulher e familiares. Enfermagem Obstétrica, Rio de Janeiro, 2016 jan/abr; 3(1): e29. p.1. Disponível em: <http://www.enfo.com.br/ojs/index.php/EnfObst/article/download/29/28>. Acesso em dezembro de 2018.

KOMURA. L.A.; DE SOUZA C.M. Assistência ao parto com a presença do acompanhante: Experiências de profissionais. Invest. Educ. Enferm. 2007; (25)1: 74-81. Disponível em: <https://www.redalyc.org/pdf/1052/105215404008.pdf>. Acesso em dezembro de 2018.

MACHADO, N.X.S.; PRAÇA, N.S. Centro de parto normal e assistência obstétrica centrada nas necessidades da parturiente. Ver. Esc. Enferm USP 2006; 40(2):274-9. Disponível em: <http://www.scielo.br/pdf/reeusp/v40n2/16.pdf>. Acesso em julho de 2018.

PAZ, L.S.; FENSTERSEIFER, L.M. Equipe de enfermagem e o acompanhante no parto em um hospital público de Porto Alegre. Revista Interdisciplinar NOVAFAPI, Teresina. v.4, n.1, p.9-13, Jan-Fev-Mar. 2011. Disponível em:

https://revistainterdisciplinar.uninovafapi.edu.br/revistainterdisciplinar/v4n1/pesquisa/p1_v4n1.pdf. Acesso em dezembro de 2018.

PEREIRA, A.L.F.; MOURA, A.V. Hegemonia e contra hegemonia no processo de implantação da casa de parto no Rio de Janeiro. Rev. Esc. Enferm. USP. 2009; 43 (4): 872-9. Disponível em: <http://www.scielo.br/pdf/reeusp/v43n4/a19v43n4.pdf>. Acesso em março de 2018.

PEREIRA, A.L.F.; AZEVEDO, L.G.F.; MEDINA, E.T.; LIMA, T.R.L.; SCHROETER, M.S. Maternal and neonatal care in David Capistrano Filho Birth Center, Rio de Janeiro, Brazil. Revista online de pesquisa Cuidado é fundamental. Capa > v. 4, n. 2 2012. DOI: <http://dx.doi.org/10.9789/2175-5361.2012.v4i2.2905-2913>. Acesso em fevereiro de 2018.

RODRIGUES, D.P.; ALVES, V.H.; PENNA, L.H.G.; PEREIRA, A.V.; BRANCO, M.B.R.L; SOUZA, R.M.P. O descumprimento da lei do acompanhante como agravado à saúde obstétrica. Texto Contexto Enferm, 2017; 26(3):e5570015. Disponível em: <http://www.scielo.br/pdf/tce/v26n3/0104-0707-tce-26-03-e5570015.pdf>. Acesso em dezembro de 2018.

SILVA, A.L.C. (2015). Centro de parto normal: Humanizando o Espaço. Revista Especialize On-line IPOG - Goiânia - 9ª Edição nº 010 Vol.01/2015 julho/2015. Disponível em: <https://www.ipog.edu.br/revista-especialize-online/edicao-n9-2015/centro-de-parto-normal-humanizando-o-espaco/>. Acesso em agosto de 2018.

SILVA, C. N. Aspectos subjetivos dos ambientes de atenção à saúde e sua relação com o ambiente construído. Arquitextos, São Paulo, ano 18, n. 212.05, Vitruvius, jan. 2018 <<http://www.vitruvius.com.br/revistas/read/arquitextos/18.212/6867>>.

SILVA, C. N. Considerations in the care of pregnant women. IFHE Digest. Revista eletrônica. Edição de 2018. Step House, North farm Road Tunbridge Wells, Kent TN2 TD R. 2018a. Disponível em: <http://www.ifhe.info/ifhe-digestv>

SILVA, C.N. (2018b). Ergonomia aplicada na qualificação da ambiência do espaço de nascer. Revista Sustinere, Rio de Janeiro, v.6, n.1. P 150-174, jan.-jun. 2018. Disponível em: <HTTP://dx.doi.org/10.12957/sustinere.2018.33609>

WALSH, D., Evidence-based care for normal labour and birth: a guide for midwives. 2007, London: Routledge.

About the author:

Cristiane N. Silva

Architect, PhD in Architecture from UFRJ, expert in Management of Healthcare Networks from Escola Nacional de Saúde Pública Sergio Arouca - ENSP / FIOCRUZ. She is an advocate for Hospital Ambience at the Ministry of Health and helps with hospital infrastructure management services at the Ministry of Health State Superintendence of Rio de Janeiro, besides teaching maintenance management and conservation of healthcare buildings.

IPH

INSTITUTO DE
PESQUISAS
HOSPITALARES
ARQUITETO
JARBAS KARMAN