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THE HEMODIALYSIS ENVIRONMENT: THE CONTEXT OF SOCIAL INTERACTIONS AND HUMAN RELATIONSHIPS THAT INVOLVE SPACE AND PLACE

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ABSTRACT

The present study aimed to generate a discussion about hospital environments, specifically, hemodialysis centers, symbolism and meaning for their users, taking into account factors such as their personal preferences, exempting themselves from operational bias. The person-environment relationship in hemodialysis clinics and other hospital equipment could be the subject of research, because, based on the narrative review of the literature and case studies, it was found that this relationship is not frequently used in the context. The methodology is qualitative, descriptive and exploratory and was based on the research evidence and on the quality aspects of the environment. Techniques such as observation and instruments such as structured questionnaire and semi-structured interview were used. Observing the results, it is perceived that the unique aspects of the users are not considered in hospital architecture projects.

Keywords: Health Environment, Interior Architecture, Hemodialysis, Human Relationship, Social Interaction.

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INTRODUCTION

The hemodialysis (HD) environment is considered important for users in renal replacement therapy (RRT) because it involves the actions of their routine and, thus, this space becomes symbolic and significant for the social context of this community. Steiner (2016) understands that this fits into the studies of this microsystem and its human-ecological relationship. In this sense, HD rooms are understood as technical places appropriate to the exercise and disciplinary conditions of health, with functionally organized environments and intended for specific groups in a rational, scientific and contemporary society. When seen from a general context of how users act, such clinics and their HD rooms are similar to other built environments, because they serve as a response to the normal operating mode of change in the natural world (functioning of the organism) in favor of peoples, groups and visions of society (LARAIA, 2001). Based on this understanding, the objective was to discuss what the environment of HD centers symbolizes and means for their users, in an attempt to point out what is directly functional to the rational and scientific logic of SRT.

As a premise of the research, the interpersonal relationships of the HD rooms occur in a life scenario interactive to the human interaction that is given by the environment. In these places there are physical, social, technical, economic and cultural elements. The present research presents three questions for the same place: the evaluation of architectural structures, the patients' impression of RRT and the subjectivity of the interviewees.

The explanation of the spatial nature and the nature of the place allows us to differentiate the physical (material) substrate from the environment of social organization of the place, and both from the construction of individual subjectivities. This allowed working from the macro to the microscale and it was possible to achieve a variety of ecological-environmental classifications, but only the context of greater proximity and autonomy between users was observed, that is, the microsystem defined by the nanoterritory of the HD center. For the clinical space as a health ecosystem and the group in RRT, it was decided to use three categories, namely location, environment and environment. However, the concept of sense of place is vague (NAJAFI, 2011), but it brings different possibilities of approach in a multidisciplinary way (PENG et. al, 2020). Bearing in mind the terminological differences of the different areas of knowledge, or terminological approximations, they deal with human actions and relations that involve (a) space and place and (b) the context of social

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interactions of the individuality of the person or group. For example: (1) Lefebvre (2019), classifies housing into three types: the "physical house", the "subjective house" and the "personal house", where he sought objectivity and subjectivity in the context of the life of an elderly person. These categories are used to formulate systems, classify and distinguish objective and subjective aspects of patients in an HD center; (2) Sattarzadeh and Asl (2015) organize the structure of a space for the study of architecture having in mind the sense of place based on factors of cognitive and physical perception.

The place is understood as the sensitive form of the space and its physical materiality of an unfinished object (geometry and aesthetics of the environment, construction systems, comfort, facilities, equipment), which exist "before" the user's perception (SPELLER, 2005). The environment described by Campos de Carvalho, Cavalcante and Nóbrega (2011) is a multidimensional concept based on four assumptions: (a) It is two-way in the person-environment context; (b) Dimension variables are interdependent; (c) It is a "physical environment"; (d) It is not neutral, that is, it is not free of values, since they interact with people and society, create expectations, contribute to controls and behaviors, position people (socially, culturally and emotionally), contribute to identifying a being in the world. In short, the environment is a context that adds value to a place, which can be objectively described, such as work organizations and functional activities (protocols of procedures and responsibilities; establishment of work and care groups; service flows; layout organization; nature of the population), forms of interactions, hierarchies and skills.

According to Geertz's theory (2008), and believing in a new sensitive and existential moment of SRT, it is assumed that users must have new experiences and face a new social environment. The author believes that the place, the environment and the setting are symbolic forms that provoke significant sensations. The conditions of these users in RRT are like those of the actors who experience a new clinic. For them, it is a new scenario of integration, changes and cultural conflicts (psychological, organizational and behavioral). On the one hand, based on this logic, we sought to avoid the prior presumption of negative or positive values that researchers may have in relation to HD centers. On the other hand, the systematic properties of analysis were adapted based on the answers to the questionnaires, interview scripts and observations.

Objectivity was also sought in the analysis of the person-environment relationship through the participants' feelings about the experience in the HD center. In other words, users' feelings, even those that are not necessarily related to therapy, are useful as we

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argue that interior architecture makes a valuable contribution to the HD environment and affects both users and the health team. We also sought to describe the personal experiences and feelings of users in RRT, such as: (1) Behavior and actions; (2) Main rational thought; (3) Connection of facts and events that were revealed during your SRT. In addition, it was sought to understand the possibilities of harmony, stability and coherence, and to indicate integrations or inconsistencies in the social and human relations in that environment, as well as in the bonds established there. In practical terms, notes were selected from the testimonies that deal with situations such as: Me; Me and the other; Memories and their stories; Life today and the prospects for tomorrow; Relational universes, desires and feelings; Questions about what is comfortable, appreciation and affection.

METHODOLOGY

The nature of the research is qualitative, descriptive and exploratory, since other studies related to HD centers, such as life scenarios that affect users on RRT, are scarce and mostly with inconclusive results. It included structured question questionnaires with users in RRT and semi-structured interview scripts with the health team. Subsequently, through the collection, access, mining and synthesis of these data, the place was investigated in a bidirectional interaction with the user, the environment and the environment, according to subjective and objective aspects. As for the physical-material, abstract-natural and subjective elements, the research methodology involved a cross-sectional study to understand how the population in RRT relates to the environment of the HD center.

The survey divided users into two subgroups, those who filled out a questionnaire and those who were interviewed: external and internal users. The included external users are individuals selected not randomly, but specifically from a population of patients with chronic kidney disease (CKD) on hemodialysis. The group totaled 516 users, of which 278 (55.6%) participated. This confirmed that the research sample was sufficient, considering the population of chronic kidney patients hospitalized in the city of Juiz de Fora (MG). The sample was validated based on the number of patients studied (>50%). Internal users include health professionals who were present directly or indirectly in the HD center, intermittently (physicians) or in fixed work shifts (patient care technicians). Children and adolescents, individuals who accompany users on RRT, patients on peritoneal dialysis, people with high health risk or imminent risk of death, and people who were momentarily

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unable to answer the questionnaires and those who refused to sign the consent form for the research were excluded from the sample. The survey included: (1) all genders; (2) ages between 18 and 90 years; (3) different socioeconomic, education and income levels and; (4) residents of the southeastern macro-region of the Minas Gerais State Department of Health (SES-MG), headquartered in the city of Juiz de Fora, within the scope of the Unified Health System (SUS) of the Ministry of Health (MS). This macro-region involves 66 micro-regions that have support, including health and there are three clinics authorized to serve the city and the surrounding micro-regions.

The researchers, in addition to systematically observing the users, collected environmental data that proved to be significant and that were treated as relevant observational findings about the quality of the place, environment and/or environment, for the TRS users. This was also considered for behavioral aspects, habits, personal and/or collective values, in dealing with people during on-site visits and interviews.

The profile of the external user in the HD centers surveyed was determined according to the survey of gender, age, education, weight, tobacco dependence and prevalence of pre-existing conditions. The satisfaction of users in relation to the space, the environment and the environment was also evaluated. This level of satisfaction was assessed through two categories of questions. One is about the built environment (levels of environmental comfort, lighting, temperature, noise, layout and feel of the room and the equipment used) and the other is related to the forms of interaction with people and care teams (transportation from home to the HD clinic, *check-in service* before the HD session and interactions with the health team during the sessions).

This article used data collected by the authors, where the participants provided written informed consent in the Informed Consent Form (ICF), attached to the research project that was approved by the "Ethics Committees in Research with Human Beings" (CEP), under registration CAAE 89481318.1.0000.5133 of Plataforma Brasil.

RESULTS

ARCHITECTURE POLICIES FOR HEMODIALYSIS IN BRAZIL

In Brazil, it is part of the elaboration of any architectural project of a Health Care Establishment (EAS), compliance with the ANVISA Ordinance Resolution (RDC) and the Standard Operating Procedure (SOP). Other legal instruments such as legislation, norms

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and municipal ordinances (fire fighting and prevention, Brazilian Association of Technical Standards – ABNT, Ministry of Labor) are not discussed in this article.

SOPs are executed by each institution and for each service provided and define each SRT approach based on the technique and technology of each professional team. And there is a set of specific RDCs that deal with HD centers: RDC No. 50/2002, RDC No. 154/2004, RDC No. 33/2008 and RDC No. 11/2014. Respectively, they deal with construction, service attributions, water treatment and good practices of dialysis services.

Other important ANVISA resolutions include RDC No. 222/2018, which deals with the management of health waste, and RDC No. 189/2003, which deals with the procedure for analyzing architectural projects within that observed in RDC No. 50/2002.

These documents exist previously or are issued concomitantly during the development of the environmental project, but are independent of the clinics' project. In this sense, because they are mandatory, they are decisive for the feasibility study and for the program of needs of the EAS. They are also spatial layout tools where the following stand out: minimum dimensions, flow of services, quality and type of equipment and furniture, and administrative, social, professional and behavioral organization. Which, in turn, determines the functional and physical needs of the installation of hospital equipment. In this context, there is no impediment for the architect to establish other conceptions that can be incorporated into the project for reasons other than those of health organizations. Thus, aesthetics, environmental comfort and the choice of construction material are other skills that develop the construction project.

It is also assumed here that the health process determines the demand for more clinics and that it presents essential factors. Thus, in Geertz's (2008) understanding of human culture for different societies, and especially in the current scenario, the health process is a reference and should be present in the conception. In addition, it reflects on the technical-scientific logical approach used in HD centers. There is a significant, intrinsic, and symbolic determinant of the projects, which is the way in which ethical and moral issues are interrelated with the worldviews of health. The built environment is a given, including the design and execution of the projects of an HD center. It is vital for the RRT user that the environment responds effectively and efficiently to the hemodialysis health process. Thus, the natural evolution of kidney disease, which leads to loss of kidney function and hemodialysis, presents an evolution in health science, but also has consequences for the lives of patients. The legal approach of the health system requires

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HD centers to provide efficiency and effectiveness, because it guarantees safety and requires adequate locations. However, effectiveness is not guaranteed by the simple fact of meeting exclusively sanitary requirements.

THE THREE HEMODIALYSIS ROOMS FOR INVESTIGATION

The study covered three HD centers through documentary survey and *on-site visits*. The clinics are a reference in RRT for the SUS and the Brazilian Ministry of Health in the region. They have similar HD room structures, but the projects are dated in different service periods (1976, 2006 and 2009). It is important to mention that urban issues were not contemplated in the research. However, it can be noted that the location of the three maintains certain similarities, mainly that they are relatively close to the reference hospital, respectively, to the Emergency Room Hospital (HPS), Therezinha de Jesus Hospital and Maternity Hospital (HMTJ) and the University Hospital of the Federal University of Juiz de Fora (HU/UFJF). However, it is worth noting that, according to the standards, they can be physically, organizationally and environmentally independent of the hospitals in question.

The users of the HD clinics were divided into two groups to answer the questionnaires and be interviewed: internal and external. Internal users are professionals who are present directly or indirectly on the premises of the units intermittently or during service shifts (physicians and nursing technicians). These staff are linked to the institution and its organisation in a certain way to ensure the functioning of the clinic (social, technical, laboratory support, daily care). External users are patients who are in HD. Within this human context, we can observe at least two interesting points. On the one hand, RRT users have a common need for dialysis to keep them alive, but they constitute a diverse profile of people, given their differences, ranging from gender to habits. On the other hand, the training of the clinic's team of workers is also diverse, but from a different group perspective: they vary, for example, in their training and performance.

From observation and research objectives, both groups are significant for the setting in the construction of the clinic. It is emphasized that, in this human context, the place is given to the individuals who experience life in it, either by the legislation that regulates the EAS, or by the constructive norms. In this same logic, it can be added that the environments of hemodialysis clinics, especially HD rooms, even related to the human-institutional character that governs them, are still pre-established by the need to comply with SOPs, due to the organizational institutionality of work (hierarchy of activities, functions and

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competencies), or for prevention and action in the logic of RRT and, consequential, knowledge of the health-disease process.

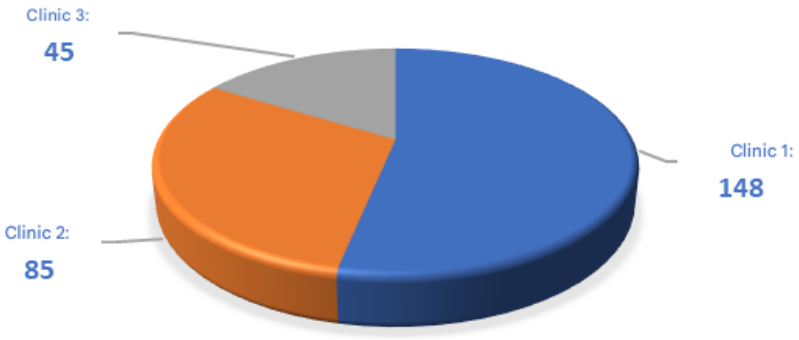
The *on-site* research showed that the space in two of the three clinics was designed to become HD clinics, one of which is designed as a therapeutic hospital ward and the other is isolated and part of a multi-use building. The third clinic is located in an isolated adapted space, next to the reference hospital.

HD centers have health licenses issued by the State Department of Health (meeting the standards of ANVISA and the Ministry of Health). In practical terms, the layout of the HD room proves the spatial aspects described. Thus, the direct influence of the layout of the equipment of the workstations was observed, according to the requirements of RDC No. 50/2002, considering the similarities between the HD rooms studied. HD clinics are different sizes and were built at different times and by different architects, but their equipment complies with RDCs and professional guidelines (SOPs) that mandate that professional staff have a full-range view of hemodialysis chairs. This also shows that SOPs are decisive aspects of the place, although they focus on professional conduct, that is, they do not aim at the subjective quality of people (whether internal or external users), but are procedures that should be performed in a hemodialysis room.

HD USER PROFILE

For the results, the data collected in the 3 clinics were compiled, according to the total sample of 278 patients with Chronic Renal Failure (CKD) in internal condition. By separation, 148 patients from clinic 1 participated in this study, with a greater predominance of chronic kidney patients, 85 patients from clinic 2 and 45 patients from clinic 3 (Graph 1).

Graph 1 – Distribution by number of patients x clinic



Source: the authors

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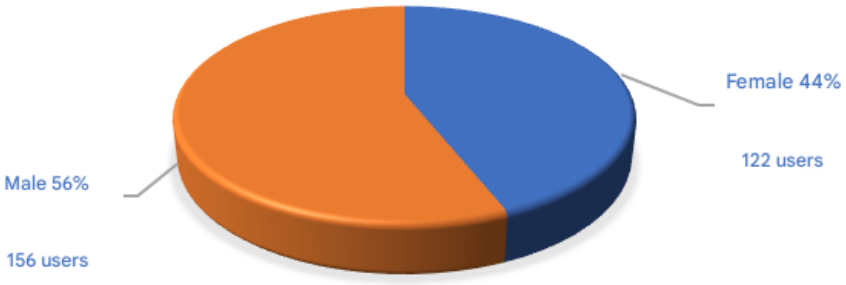
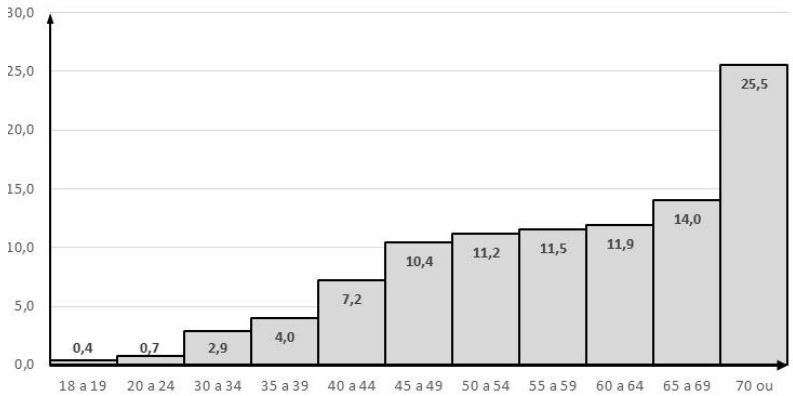
The findings of this investigation imply that the factors for kidney disease point more to the male population (56%), which shows a considerable difference of 12% for the female population, with 44% (Graph 2). In the analyses of this male predominance, the *X2* test shows that, in general, this number is significant, for a confidence level of 95% – p (sig) = 0.011.

Graph 2 – Distribution by gender



Source: The authors

Graph 3 – Distribution of the number of patients by age group



Source: The authors

It is noted that, in general, the patients are in the older age groups (Graph 3), 74% of them over 50 years of age, and 25% of this amount, over 70 years of age. This occurs for both male and female patients. The chi-square test did not show significance, since p (sig) = 0.926, for a confidence level of 95%. Regarding the patient's weight, 66.7% of male patients are in the range of 65kg to 84kg, while 62.2% of female patients are in the range of 65kg to 84kg (Table 1). The chi-square test shows that this difference is significant, p (sig) = 0.024.

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Table 1 – Distribution of the number of patients in relation to weight x gender

		Gender		Total
		Female	Male	
SD	*f*	1	0	1
	%	0,8%	0,0%	0,4%
34/44 kg	*f*	6	1	7
	%	4,9%	0,6%	2,5%
45/54 kg	*f*	21	15	36
	%	17,2%	9,6%	12,9%
55/64 kg	*f*	32	36	68
	%	26,2%	23,1%	24,5%
65/84 kg	*f*	44	68	112
	%	36,1%	43,6%	40,3%
85/105 kg	*f*	18	36	54
	%	14,8%	23,1%	19,4%
Total	*f*	122	156	278
	%	100,0%	100,0%	100,0%

Source: The authors

The low level of education of the users, as pointed out in the analysis, is a factor for misinformation, which makes it difficult to treat the underlying disease, thus not preventing the patient from losing kidney functions. This characteristic of the HD user profile is shown to be one of the factors that have led a considerable number of contingents to CKD. Almost half of the patients (41%) have incomplete elementary school (Graph 4).

It is perceived that the patient comes with a considerable degree of misinformation and arrives anxious at the clinics, as they come from the reference hospitals where they were hospitalized and were referred to start treatment.

The first approaches are not very enlightening, patients feel sick without knowing for sure what is happening, until the doctor explains to the family member that he had kidney failure. Thus, there is a need to place a catheter to save their life inside the hospital, through the first dialysis in a comatose state in the external condition, and when they leave the hospital they are directed by the SUS to the clinics, to start their treatment. Most patients idealize that renal replacement therapy is temporary, when the team of doctors, nurses and multidisciplinary people work to clarify the situation, they tend to enter a state of melancholic sadness and anxiety, where feelings are mixed, and may even, in some cases, evolve into depression. They question themselves about the disease process and their path to the hemodialysis chair, which is why family support becomes extremely important and the nursing team often provides support to these patients with CRF and their relatives. However, the environment and the interaction in HD make these individuals observe the space around them, in which the improvement of conservative treatment is not so favorable. According to graph 4, most of the individuals surveyed have a low educational level (63% are between

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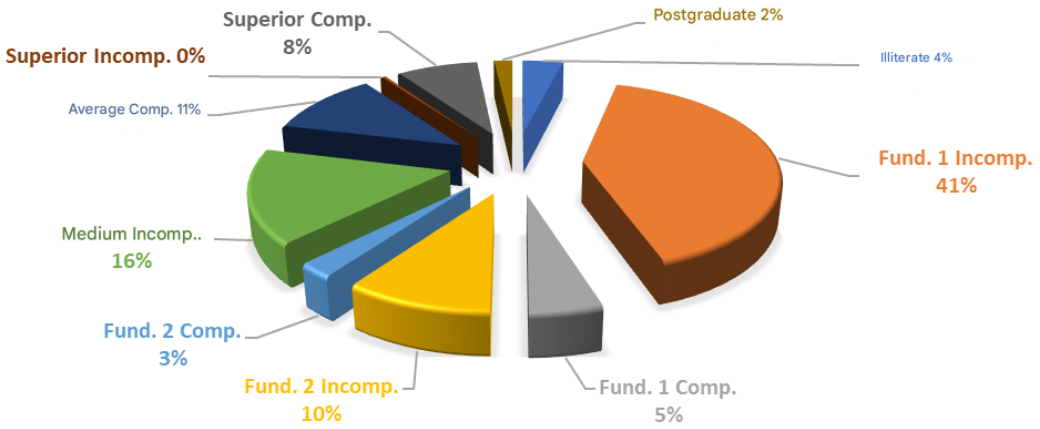
illiteracy and elementary 2), a factor that may have contributed to the presence in the HD classroom.

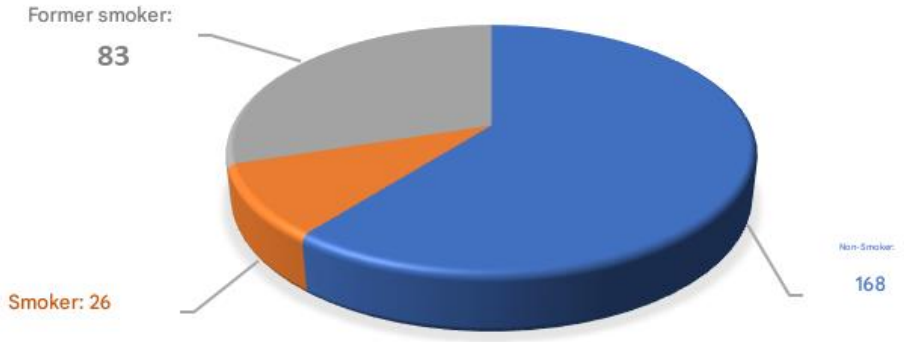
Graph 4 – Distribution of the number of patients by education level



Source: The authors

The number of nonsmokers in the 3 clinics (60.4%) is higher than that of smokers (9.4%) (Graph 5). The proportion of smokers in the Brazilian adult population fell from 15.7% to 10.1% between 2006 and 2017, a reduction of 36%, according to a survey carried out by the Ministry of Health (2017). Some patients are former smokers who, upon discovering the CKD disease, by medical advice, stopped smoking, which is a benefit, since diabetes mellitus and smoking can compromise the circulatory system, causing peripheral arterial obstructive disease.

Graph 5 – Distribution of the number of patients due to smoking



Source: The authors

The patient who has quit smoking has better conditioning and will dial in better conditions than the one who is still a smoker. When this occurs, he enters a better phase of the treatment, as the patient begins to understand that he needs to collaborate to do a good

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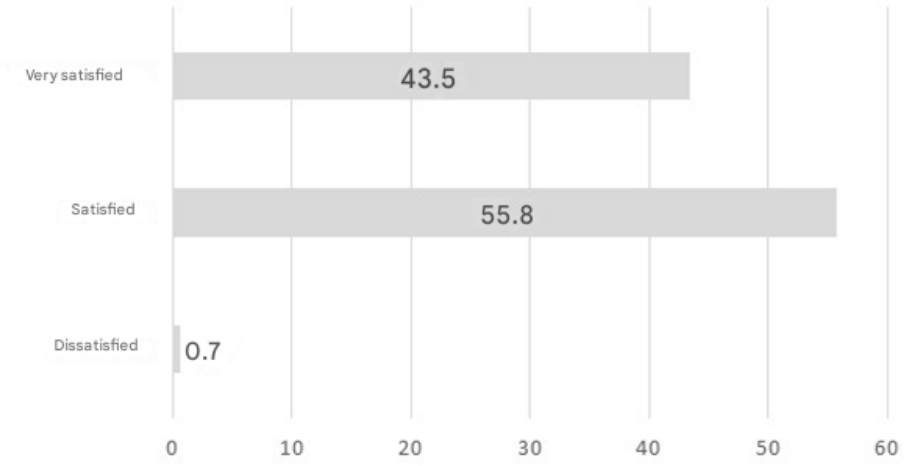
dialysis, starts to better absorb the environment in which he is inserted and the relationships with the doctors become easier.

RECEPTION

The degree of satisfaction is 99%, with only 2 patients "dissatisfied" (Graph 6). Patients, over the years, like the service provided by doctors and nurses in the clinics, as the teams are aware of the disease and the patient's stay in the clinic and the complications that may occur. They make coexistence the best possible, because, for some patients and families, it will be for many years. Therefore, they try to make it as pleasant as possible, not distinguishing between patients with positive or negative serology, thus creating affection, intimacy and bonding with patients. The impact of the patient upon receiving the news can be devastating if he is not prepared, sometimes they are frightened by the machine, sometimes by the other dialysis users sitting in the armchairs, or by information from a friend who does not know the treatment.

Graph 6 – Satisfaction from the reception to the HD room



Source: The authors

EMOTIONAL STATE

The impact of diagnosis and dialysis treatment can lead the patient to intense emotional exhaustion, due to the need to undergo a long and tiring treatment, by committing to be present at the same time three or even four times a week, depending on the case, and the comorbidities are numerous, causing physical limitation and decreased social and cultural life (THOMAS and ALCHIERI 2005).

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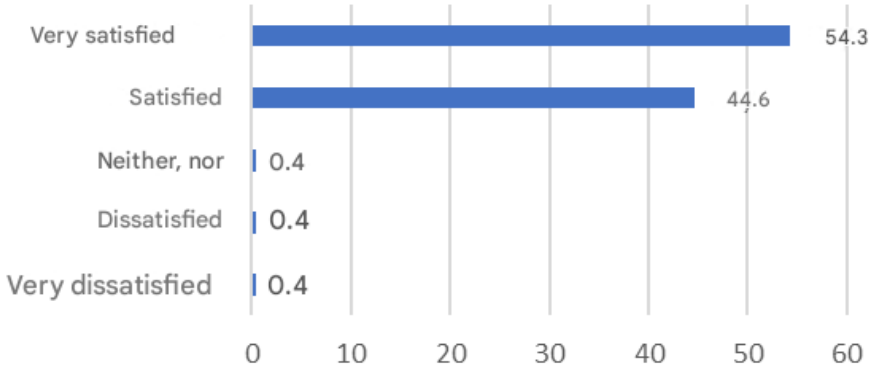
For some chronic kidney patients who understand or realize that they will never leave their seats, this can become desperate. Transplantation is a way out for kidney patients, but they run the risk of rejection and loss of the kidney for the second time, and then it is necessary for them to return to the HD room or, in the last case, they may die. They become extremely needy individuals and most of these patients have witnessed dialysis companions get sick and even die. Their mood becomes more depressed, as time goes by and the support of nurses, doctors and the multidisciplinary team becomes important throughout their stay in the space. Some lose the pleasure of living or start to pick on things that don't make so much sense, such as, for example, always requiring the presence of the same nurse during treatment, among others. However, according to graph 7, there is a determining factor for the high degree of satisfaction/a lot of satisfaction with the team (99.9%).

Graph 7 – How they feel treated by the HD team



Source: The authors

Almost 80% of respondents are feeling well at the time they filled out the questionnaires. Only 3% feel unwell (Table 2). All correlations for this topic are independent. From the data, it can be seen that even patients who feel ill (n=8) were satisfied or very satisfied "from the reception to the hemodialysis room" (Table 3).

Table 2 – Sentiment at this time

	n	%	% Valid(*)	% Accumulated
Barely	8	2,9	2,9	2,9
More or less	48	17,3	17,5	20,4
Well	218	78,4	79,6	100,0
Total	274	98,6	100,0	
SD	4	1,4		
Total	278	100,0		

Source: The authors

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Table 3 – Welcoming + emotional state (Feeling at this moment x How they felt in the HD room)

	How did he feel, from the reception to the hemodialysis room			
Feeling at this moment	Unsatisfied	Satisfied	Very satisfied	Total
Be	0	3	5	8
More or less	1	29	18	48
Well	1	123	94	218
Total	2	155	117	274

Source: The authors

The same data, correlated to the question of the questionnaire "How do you feel treated by the hemodialysis team", show that almost all patients were satisfied or very satisfied with the treatment and feel well (n=271) at the time of application of the questionnaire (Table 4).

Table 4 – Welcoming + emotional state (How they feel treated by the team x Feeling at the moment)

	How do you feel treated by the hemodialysis team					
Feeling at this moment	Very dissatisfied	Unsatisfied	No, no	Satisfied	Very satisfied	Total
Be	0	0	0	2	6	8
More or less	0	0	0	27	21	48
Well	1	1	1	95	120	218
Total	1	1	1	124	147	274

Source: The authors

Table 5 shows that 69.4% had no difficulty adapting and 30.6% of the patients had some difficulty at the beginning of HD treatment. The latter feel scared and confused, but the doctor usually talks explaining the situation and then it is passed on to the multidisciplinary team, in which, little by little, he works on acceptance.

Table 5 – Had difficulty adapting at the beginning of HD treatment

	n	%	% Valid(*)	% Accumulated
Yes	83	29,9	30,6	30,6
No	188	67,6	69,4	100,0
Total	271	97,5	100,0	
SD	7	2,5		
Total	278	100,0		

Source: The authors

Table 6 – Difficulty in adapting at the beginning of HD x How it felt, from the reception to the HD room

Had difficulty adapting at the beginning of HD treatment	How did he feel, from the reception to the hemodialysis room			
	Unsatisfied	Satisfied	Very satisfied	Total
Yes	0	49	34	83
No	2	105	81	188
Total	2	154	115	271

Source: The authors

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However, these 83 patients declared themselves satisfied or very satisfied in the environments from the reception to the hemodialysis room (Table 6), even though they had difficulty adapting to the start of HD. In addition, it was verified that 188 patients had no difficulties and felt satisfied with the treatment given by the team (Table 7).

Table 7 – Had difficulty adapting at the beginning of HD x How they feel treated by the team

Had difficulty adapting at the beginning of HD treatment	How do you feel treated by the hemodialysis team					
	Very dissatisfied	Unsatisfied	No, no	Satisfied	Very satisfied	Total
Yes	0	0	0	43	40	83
No	1	1	1	81	104	188
Total	1	1	1	124	144	271

Source: The authors

ENVIRONMENTAL COMFORT

Regarding the approximate time of discomfort, based on the questionnaire analyses, it occurs equally in the morning and in the afternoon (Tables 8 and 9). This was due to the fact that the researcher was available at these times. This may have caused a "tie" in the morning and afternoon shifts, and is not relevant to the present study. The result of the test shows that there is a clear preference with 147 users opting for natural light (Table 10), the chi-square test was performed with p = 0.00. Separating by clinic, the same preference for natural light is shown, except in clinic 3, where there is another "tie" (Table 11).

Table 8 – Approximate time of discomfort during their stay in the seat

Shifts	Timetables	n	%
Morning	6 a.m. - 9 a.m.	27	
	9 am - 12 pm	43	
	Subtotal	70	25%
Late	12 pm - 3 pm	43	
	3 pm - 6 pm	26	
	Subtotal	69	25%
Night	6 pm - 9 pm	27	
	9 pm - 11 pm	6	
	Subtotal	33	12%
	NO	106	38%
	Total	278	

Source: The authors

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Table 9 – Discomfort time per shift

Type of lighting that feels best	n	%	% Valid
Morning	70	25,2	40,7
Late	69	24,8	40,1
Night	33	11,9	19,2
Total	172	61,9	100,0
SD	106	38,1	
Total	278	100,0	

Source: The authors

Table 10 – Type of lighting that feels best

Type of lighting that feels best	n	%	% Valid(*)
SD	23	8,3	8,3
Artificial	108	38,8	38,8
Natural	147	52,9	52,9
Total	278	100,0	100,0

Source: The authors

Table 11 – Type of lighting that feels best x Clinical

Type of lighting that feels best		Clinical			
		1	2	3	Total
SD	*f*	17	2	4	23
	%	11,5%	2,4%	8,9%	8,3%
Artificial	*f*	59	28	21	108
	%	39,9%	32,9%	46,7%	38,8%
Natural	*f*	72	55	20	147
	%	48,6%	64,7%	44,4%	52,9%
Total	*f*	148	85	45	278
	%	100,0%	100,0%	100,0%	100,0%

Source: The authors

Tabulating by shift (Table 12), natural light is preferred by patients in the morning shift (61.4%). In the afternoon shift, the preference is for artificial light (43.5%) and in the evening, there is a "tie" between natural lighting (48.5%) and artificial lighting (48.5%). However, there is no significant difference per turn, as p = 0.1828.

Table 12 – Type of lighting that feels best x Shift

Type of lighting that feels best		Shift			
		Morning	Late	Night	Total
SR	*f*	2	10	1	13
	%	2,9%	14,5%	3,0%	7,6%
Artificial	*f*	24	30	16	70
	%	34,3%	43,5%	48,5%	40,7%
Natural	*f*	43	29	16	88
	%	61,4%	42,0%	48,5%	51,2%
Total	*f*	70	69	33	172
	%	100,0%	100,0%	100,0%	100,0%

Source: The authors

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According to table 13, natural lighting is preferred (n=147), but without the direct incidence of the sun. The fact that the subject is in his renal therapy station makes him remain in one of the positions where his main focus becomes the ceiling, and, with that, the artificial light bothers him, making him prefer natural light. Due to this, some patients cover their heads to sleep during the 4 hours of dialysis. However, using the chi-square test, it was observed that it is not significant (p = 0.364).

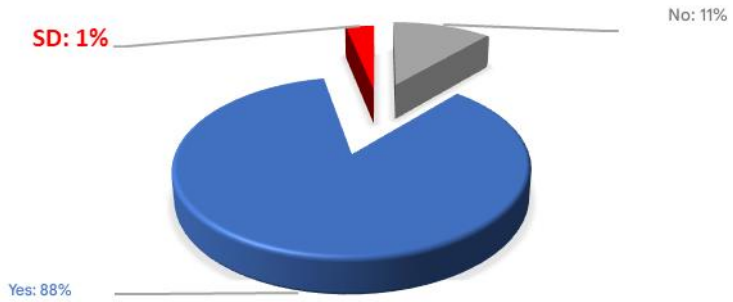
Table 13 – Type of lighting that feels best x Length of stay at the Clinic

Type of lighting that feels best		Opening hours inside the Clinic			
		6 am to 12 pm	12 pm to 6 pm	6 pm to 11 pm	Total
SR	*f*	3	16	3	22
	%	2,970297	13,55932	5,172414	8,243728
Artificial	*f*	36	48	23	108
	%	35,64356	40,67797	39,65517	38,70968
Natural	*f*	61	54	32	147
	%	60,39604	45,76271	55,17241	52,68817
Total	*f*	100	118	58	277
	%	100	100	100	100

Source: The authors

According to the data in graph 8 and table 14, when considering the place where the patient sits, 88% like the place, separated by clinic, 127 users in Clinic 1, 74 in Clinic 2 and 37 in Clinic 3. The chi-square test indicated a p-value = 0.297

Graph 8 – Do you like the place where you sit?



Source: The authors

Table 14 – Do you like the place where you sit? x Clinic

Do you like where you sit?		Clinical			
		1	2	3	Total
No	*f*	13	10	8	31
	%	9,3%	11,9%	17,8%	11,5%
Yes	*f*	127	74	37	238
	%	90,7%	88,1%	82,2%	88,5%
Total	*f*	140	84	45	269
	%	100,0%	100,0%	100,0%	100,0%

Source: The authors

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Still regarding the place where they sit, an important factor for the article stands out: friendship with 49% (Table 15), present in the interaction between patients. The feeling of being inserted within that group and in the context of the space becomes important as the months and years go by. Patients go through periods together, so each one is known by name or nickname, making them unique. Their sadness and joy are taken to the clinic and to friends, they end up sharing their feelings with their dialysis companions, but when one of them needs help from the nurses, everyone has the feeling and feeling of helplessness for not being able to do anything for the friend who is not well. This feeling is knowing that one day it can be any of them, so they remember friends who have already passed away in their presence and sadness reappears. They talk about the disadvantages of being in a hemodialysis room and share the suffering of treatment and comorbidities in addition to CKD.

Table 15 – Why do you like this place?

Reasons	N	%
Friendship	55	49%
No fixed seat / Armchair caster	28	25%
Costume	24	21%
Front for TV	6	5%
Total	113	

Source: The authors

DISCUSSION

HD center projects, as a built space, are seen from the perspective of what they can contribute to a positive experience. The idea of place is understood in the polysystemic context of the patient's bidirectional and multidimensional relationships, in the exclusive spatial microsystem of the HD center. As such, there is room for the intersubjective relations that occur. Therefore, a possible set of elements extracted from the sense of space includes: the identity of the place (spatial and material, through facts and history accumulated over time) and the place itself (description of the place by each patient), dependence (social and personal connections with the place) and appreciation and affection (subjective and intuitive aspects of the patient) (SOLIS, 2009; NAJAFI, 2011).

The question that arises is how it can be facilitated so that users on RRT have their positive perceptions and feelings improved and the negative ones mitigated. An environment for a given purpose affects and is affected by interactions with and between users. It is understood that the daily aspects and human relationships that are established in the HD

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centers, individually and socially, can physically integrate project conceptions. During the interviews, we tried to read the real and abstract environment, in the person-person, person-environment and person-society context. The evaluations carried out with the users sought to identify, through the answers, what is considered efficient and effective from the patient's point of view and not from the health-disease point of view prescribed for the works.

The article focuses on three concepts related to the regulatory function and risk reduction through the adoption of prevention and control in the development of health surveillance (COSTA, 1999, 2003), which are: efficiency in surveillance during health procedures; effectiveness, as an ethical-professional criterion in the adoption of safety procedures that should be applied in any HD center (in the case of construction of new clinics, it must be standard for any equivalent center); and effective health care, where a user on RRT would consider it positive beyond the technical aspects of the health-disease treatment process, because it involves the consideration of economic, social, and political aspects, which are correlated with the reality of the issue. When observed from an environmental perspective, the historical importance of the procedures is perceived, both for the physical health and for the mental and social health of people and society as a whole (STEEMERS, 2020). These procedures are present in the concern with the effects that the design of cities and their layouts have on public health, buildings, engineering works, the development and application of technical standards and norms, and environmental sciences, such as the comfort of buildings for the population (ANDRADE, 1992; CAMPOS, 2002).

Guelli (2014), when describing the development of projects in the health area, highlighted that market strategies and business models are essential for the design process of a building. However, such excellence is the result of a context of three factors: functionality, impact and construction. Such factors add value to the environment, where each one has its own elements (innovation, personal satisfaction, suggested quality for the environment, social interaction), which when considered together, influence people, causing, for example: positive or negative distractions, environmental comfort or discomfort, privacy and sociability, perception of space (mental map) and welcoming and emotional support spaces. Thus, we sought to show evidence that the built spaces could be analyzed under the physical aspect (program of architectural needs, sectorization, flows, dimensions); technological innovation (communication networks, materials, construction techniques, furniture); satisfaction with the performance of the structure (sustainability,

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thermal, acoustic and light comfort); and the aspect of urban location and interaction with other systems (Guelli, 2014).

From the procedural point of view of the project, two aspects are significant for the development of the proposal: The need to carry out a conventional investigation of the structure of the place (physical, legal and environmental conditions) and to systematically collect activities of the daily life of the patients (procedures, habits, behavior). Both emerge, then, as part of the possibilities of analysis of the project. Steemers (2020) indicates that architecture is a cross between cultural guidelines and social activities, and states that it is unlikely that a project will meet all human needs. He also adds that it will be limited, as well as the locations and environments are finalized with adaptations within a horizon of possibilities. In theory, it is common sense that meaningful reading is an inseparable part of the language of the place and that within this universe there are relationships between people (SOLIS, 2009). This happens through the reading of the building that is given (physically and spatially, socioculturally and technologically). It is noteworthy that the perception of an environment is a sensitive and subjective reference. In addition, there are relationships and stimuli of environmental systems that are present (MOSER, 2018).

In HD rooms, human interaction takes place within the built environment and three issues involve these places. The first question is to understand the jargon necessary to create and compose the built environment: (1) Physical-material object: where several measurable aspects of the space are included, such as geometry and dimensions, layout, additional physical installations, furniture finishing and; (2) Abstract-natural object: result of the environmental conditions of the site (noise levels, luminosity, temperature) and the operational organization and movements (flows). The second issue is of a different nature, they are the values that go through the identification and relationship of beliefs, social and cultural formation, pleasure and pain, losses, desires, personal concepts and the symbolic nature of things. The third question is a subjective object, resulting from human complexity (histories, memories, biological nature) that also involves the previous two.

Architecture and interior design can promote good feelings among their users (STEEMERS, 2020). For this, five factors are necessary: (1) Connectivity, such as adaptability, being pleasant and feeling at home; (2) Keep people busy, including providing them with access to equipment and physical activities; (3) Stimulate and challenge people cognitively, providing them with positive distractions, either through the multiple possibilities of the place, observing the landscape, or through interactions and the presence of works of

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art, for example; (4) Stimulate new learning, whether through interactions with the place, positive distractions or organization of the layout of the environment; 5) Encourage positive relationships within the environment/space (BAKER, 2019).

The analysis of such factors shows proof that they can be considered and used as essential needs of the project, if it is intended to achieve good or better environmental results for people. Similar to this possible action, evidence-based studies (EBD) can provide subsidies to health, in the field of works that have a creation process based on theories of restorative environments *(Healing Environment)* or restorative spaces *(Healing Spaces)* (DUBOSE, 2018).

EVALUATION OF THE HD ROOM IN THE PHYSICAL-MATERIAL AND SOCIAL ASPECTS

According to Moser (2018), the bioecological model presents bidirectional movements/relationships between people and environments, which can be analyzed through actions, perceptions, and behaviors. The environment is a multidimensional concept that includes the concrete physical environment in which we live and is divided into four systems: Macrosystem; Mesosystem; Microsystem; Chronosystem.

The user in SRT is linked to his own phenomenon of consistency and changes throughout his life – his chronology (age, personal and social perspectives, habits, desire, education), his background and family relationships (emotional, physical and economic support). The professional, on the other hand, is influenced by relationships in the clinic (procedure, expenses, complaints) and their sensitivity with their peers – the users in the HD room (friendships). Thus, the respondent is circumscribed by an internal, physical-material and social spatialization.

By analogy with Saramago (2008), when seeking to conceptualize the factual space, which here translates into HD room, it can be pointed out that users in SRT go through a complex moment in their lives and existence. The subjects of this research are not considered only from the scientific point of view, that is, the body as an object of HD, as this would lead to little beyond health. We, the authors, understand that the patient carries with him the pressure imposed by time and the historical context. In this view, when interpreting the environment, it is necessary to consider the state of mind that is present in the construction of the meaning of things and involves the continuous sequence of experiences throughout life. Living in these terms is a difficult encounter, that is, it puts in check the motives and life itself while in the HD room, which brings up the question: Why am I here,

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for whom am I here? In addition, this situation, from a personal point of view, is also related to the experiences of others, since the person is not alone in that place and condition. As such, the room is full of different meanings and feelings, which brings a uniqueness in the personal and social interpretations of users in SRT.

Baudrillard (2002), from another point of view, indicates the contextual readings of forms, layouts and things in the system of objects. For him, they have a pre-established discourse, a socio-temporal reading beyond the subject, present in the place that welcomes and functions independently of him. This forms a possible relationship of space-language analysis, through the understanding of what is then identified as people's (rational) reasons and (subjective) feelings. The spatial thing, in the context that this publication proposes, is made difficult by what the operational terms represent (technical and scientific reasons), by the professional work of the clinic, where operability is independent of the individual vision, and by what the spiritual being (reason for feelings) means to a patient on RRT. Together, these lead to understanding of the HD room environment.

After selecting some excerpts from the interviews and questionnaires, as well as from the individual observation of the participants, during the process of mining perceptions and personal experiences, we sought to identify the person-environment within the following contexts: the presence of the patient, their sense of belonging and relationships, interior and exterior, time spent and losses, personal space. With this, it was shown how dialysis patients connect with the place, how they act actively and how they relate to and perceive cognitive stimuli.

CONCLUSION

Although individual subjectivity is present, a HD center is not a common interior place, nor a private space as homes are observed. The relationships established there have a specific purpose and are shaped by the actors and organized for the provision of health services. To this end, it is observed that the interior has a technical and social organization where the relationships within the group are sometimes technical, sometimes interpersonal. Regarding RRT users, there are significant cultural and behavioral differences (religion, education, gender, age). However, in relation to the physical nature of the human body, some data can be pointed out: thermal sensation of cold, sensitivity to light, position of the HD chair in relation to natural and artificial light and the need to change the environment.

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There is a hegemonic view of health in the spatial organization and layout of HD rooms. However, it should be noted that designing projects based on a hedonistic view, placing the user in SRT at the center, would be unlikely. In this case, desire would be the only driver of the project and a significant part of the reality imposed by the HD health-disease process would be compromised.

Thus, a cross-sectional survey targeted the regional population. Because it is descriptive in nature, it brought data that showed the relevance of the study for the design of HD rooms. In addition, due to its qualitative nature, it was possible to investigate the environment from the objective and subjective perspectives. In general, and in the exploratory field, we can say that the population in RRT has a significant cause-effect, but the chronological time of the individuals is an uncontrollable variable for the persistence of feelings related to the environment. This is important because, unlike other health sectors, the tendency is for treatment to last for years. The physiological description of the prevalence of chronic kidney disease (CKD) reflects the international population, and the sociocultural description reflects the national population.

Three objects were worked on, the physical-material, the abstract-natural and the subjective. The first two were analyzed together with the normative elements of the RDCs and POPs. It was observed that the first has a prescriptive character regarding the infrastructure of the AES, while the second aims at technical-professional procedures and interpersonal relationships (technical-professional level) and person-society (technical-professional and sociocultural level).

Both elements are scientific and universal when considering people, leaving no room for individual approaches or subjectivities. However, both are determinant for the technical projection and construction of the environment of the HD rooms investigated in this study, even more than the subjective object. This is possible, as seen in the layout of the rooms, because there is a sense of logic, process and movement, and workflow that determine efficiency and effectiveness in the development of SRT. That said, in a pre-established order for professional care, RDCs and SOPs, including other prescriptive possibilities (administration, maintenance) act to guarantee life in its physical parameters, and thus, obey a basic priority scale, when compared to the subjective object.

However, the metric without considering subjectivity causes an essential aspect of human nature to be lost for the individual, which can have repercussions on their mental health. It is concluded that the scenario of a HD room constitutes the setting of that place

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and, for the users, it is holistic (its elements cannot be dissociated from each other) because it does not seem possible that the academic logic, as presented here, allows the subject to distinguish the technical aspects, the professional approach or the anguish that is imposed on him for any reason while in the room. For example, the person-to-person relationship with the health team leads the patient to position himself in a different way, creating a personal space not foreseen for someone tied to a chair and a HD machine.

As the population reflects the reality of SRT, there are, in this context, sustainable academic aspects of the person-environment relationship. The results show that these three objects are important for healthcare environments. The effectiveness of the EAS is related to the conjugation of the service to the three elements of the above-mentioned object, knowing that the environment meets the expectations not only of functionality, but also of people's experience or interests that are not directly related to the essential services of assistance to the body.

We realized that the first objects, because they are palpable and measurable, tangible as scientific techniques, are focused and have more direction for professionals, whether they are architects, designers, engineers or health professionals. They also include aspects of social issues and visions, such as the contemporary reference of HD service time, which can be observed in the installation of the infrastructure, as well as in the productive work processes of the clinics. However, it should be alerted to the need to think of the projects of health establishments as more than norms, because the environment is not just the physical space.

Humanization, so emphasized for health in its different aspects, cannot neglect users by not meeting their needs for flows and processes because, in theory, this is what guarantees the quality of life of the body, considering what is possible within scientific knowledge and technological resources, and reflects physical well-being, mental and social, knowing the chances of persistence and evolution of the disease. However, the issue of humanization should not be limited to the professional problem, because the realization of a project consists in creating an environment for everyone and a positive "environment".

That is why the requirements considered in the design of an EAS are fundamental for the evaluation of the quality, efficiency and effectiveness of buildings, but they are not capable, by themselves, of determining the effectiveness for a human environment. To this end, the investigation leads to the need to adopt the complex incorporation of the presence

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of an individual, in conflict with himself and with society, as a user in SRT (person-environment, person-person and person society) in the concept and process of architectural, interior design and environmental design, under the alert of evidence found in several studies.

Research in HD rooms shows that humanization in health requires the observation of sectors and places in a differentiated way, since each population served is, in general, organized by specialized levels of health that result in compositions of different environments, which leads to particular contexts for care, experiences of people and correlated sociocultural groups. Catering to the diversity of personal spaces and social situations through architecture and interior design, due to their subjective nature, is not an easy task. However, considering that places and their environments are important to people's perceptions and feelings, it is worth answering the question: How are architecture and interior design vehicles to promote this? It may seem surprising, but heeding the technical and scientific instructions is an important start, because their objective character solves part of the problem, because it deals, at least, with the mental comfort of knowing that the treatment of the body will be assisted by environmental conditions and technical devices.

Professionals should seek means that lead them to understand the correlations of the objective guidelines with the other aspects necessary for the project to be developed. This can be achieved by traditional means (publications in technical-professional, scientific and academic journals or websites), but they must also carry out *on-site explorations* of different health services and, more importantly, they must understand the importance of placing the various users (internal and external) in the context of the development of the project, systematically considering the characteristics of the existential phenomena of people in the heart of the health systems and of the processes that involve the complexities of the *"n"* subjects in the projected place.

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