# Humanisation and soft qualities in emergency rooms

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## Abstract

***Scenario.*** Currently, there are few evaluation methods that analyse social aspects in healthcare issues, especially humanisation and well-being, as perceived by users in emergency departments which are places in which patients' psycho-physical well-being is decisive. For this reason, research was conducted to create a tool to improve the quality of these areas.
***Methodology.*** In order to conduct the research, the work was structured in three phases: the first, based on the analysis of State-of-the-Art and the current studies on the interactions established between the physical and emotional conditions of the structure and the users; the second, through the definition of a questionnaire which explores humanisation and comfort aspects; the third, through the application of the instrument.
***Results.*** The paper presents and analyses data collected from the application on a case study in Milan, analysing the responses and proposing design suggestions for increasing the quality of emergency environments.
***Conclusions.*** In anticipation of future works, the application of such a tool can provide the opportunity to improve and enhance quality and staff efficiency in emergency department spaces.

## INTRODUCTION

Currently, trends in the construction sector are mainly characterized by the need to respect the principles of sustainability, considered as a whole and therefore in its economic, social and environmental perspective, and to achieve maximum comfort for users. These two demands are closely related to each other. In fact, designing sustainable buildings is also the strategy for creating high quality environments which are capable of providing high levels of health, interpreted as the "complete state of physical, mental and social well-being" [1].

These aspects gain even more value within the architectures for healthcare. It is scientifically proven that specific humanised and warm spaces have several positive effects on all the users (patients, visitors, medical and hospital staff, technicians, etc.); specifically, in the case of patients. As Roger Ulrich *et al.* demonstrated [2], it is clear that several design expedients can reduce stress and improve the healing process. Humanisation and comfort in building environments can therefore actively contribute to the efficiency of the building and effectiveness of care [3].

In responding to the need for making facilities more social, comfortable and human in recent decades we have, therefore, witnessed growing attention to the definition of strategies and design solutions, focused not only on health services' functionality or their efficiency, but also on humanisation and comfort aspects [4].

Starting from these notions, comfort and psycho-physical well-being are the result of a series of elements that can positively or negatively affect a user's subjective feelings, such as the spatial configuration of the elements, the choice of materials, finishes and furnishings, privacy, thermal comfort, noise and light [5, 6], the indoor and outdoor relationships, sense of direction or the relationship between the user, health professional and services provided [7, 8].

Particular attention should be dedicated to emergency departments which become sensitive areas traversed by the sick and, often, by their family members. These two user categories are typically troubled, distressed or restless because of the psycho-physical moment and are, therefore, in need of a cosy and comfortable place where the sense of isolation can be reduced and the emotional tension released [9, 10].

Currently, at both the international and national level, there are several tools available for the assessment of the sustainability of buildings (LEED, BREEAM, Proto-

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collo ITACA, CASBEE, German Sustainable Building Council, Green Star Rating, High Environmental Quality, Three Star Rating, etc.) and of hospitals in particular (i.e. LEED Healthcare, BREEAM Healthcare, etc.). However, these tools are focused mainly on the microclimate and energy aspects, and on the hygiene and safety features of materials, neglecting the sensory and perceptive considerations of the users [11]. On the contrary, assessment tools that properly evaluate social aspects are usually attributable to urban contexts with issues related to public wellness, environmental impacts, access and transportation, air and water quality, policies and administrations, but lack the people's perspective [12].

Starting from the definition of social sustainability, it is conceptually clear that State-of-the-Art is rather deficient in this issue because it is difficult to obtain objective values, such as users' perception and comfort. These data could become useful for supporting in-design projects and general directors' policies and strategies for understanding criticisms and improving hospital processes [13].

Nowadays, Human Resources Departments propose several questionnaires to users (in and outpatients, visitors, etc.) and the questions are focused on aspects relating to hospital systems without any attention being given to the building environments, humanisation and the efficiency of the structure. However, these surveys are distributed only to external users and not to workers (doctors, nurses, sanitary staff, etc.) and are merely used for individual hospital investigations because at the local, regional and national level there is no common tool that can be applied for comparing the scores among several healthcare facilities. Conversely, other means are available on the web which many users use to evaluate hospital services: in fact, it is possible to find several websites in which patients can give feedback, and comment on their experience and their level of satisfaction [14]. It is evident that these tools are not objective; they do not represent correct values and typically, the comments are generic and incomparable.

Therefore, starting from these criticisms, the goals of the research group are to explore topics related to comfort and efficiency as perceived within the realities of the emergency room, with the development of an evaluation tool that is useful for the definition of strategies for the improvement of these complex places.

The analysis and estimation of the level of perception of these areas can be strategic for key choices and for retaining the most suitable ones; moreover, to better understand users' perception, it is possible to identify in detail the issues and the potentialities in healthcare facilities as bases for acting more consciously and finalizing the improvement of humanisation aspects in existing hospitals.

Specifically, the tool consists of a questionnaire for measuring the comfort levels subdivided into adult and paediatric users to give rise, through the critical answers resulting from its administration, to strategic design and management suggestions aimed at improving the humanisation of the environments. Application of the questionnaire has been specially studied to make it simple, fast and easy to understand, thus being able to provide a comprehensive picture of the situation at the time of the survey and return meaningful information for the preparation of strategies for improvement [15].

## THE ORGANIZATION OF AN EMERGENCY ROOM AND ITS COMPLEXITY

As the Italian Presidential Decree 27/03/1992 declares, an emergency room is an operating unit where all emergency cases are treated, and it presents areas dedicated to short observation [16]; here, the patient obtains initial treatment and, if necessary, can stay for a short period under observation or, in extreme cases, goes directly into an appropriate ward. It is necessary for this department to be placed within the hospital but it is provided with independent entrances, an easy access for emergency vehicles and a strategic location in proximity of the surgical area (*Figure 1*) [17].

Usually the dimensions of the emergency department, which includes a number of consultation rooms and treatment areas, a number of beds for observation and hospitalization, etc., should be established in each healthcare facility based on the typology, complexity and quantity of services to be provided in relation to the emergency expected.

The performances of an emergency department are managed according to the urgency and severity of the users' conditions and not the order of arrival; in fact, the process inside an emergency room is organized according to users' admittance by nurses or qualified triage administrators where a colour code is assigned according to this hierarchy: white (no urgency), green (less urgent), yellow (urgent), red (emergency). Following admittance, the patient waits for a pre-visit in a waiting room and usually the medical room is different from the reception area; instead, patients who need specific observations or analysis are brought to observation rooms or short stay observation and recovery units.

According to the Italian Presidential Decree 14/01/1997 [18] and the Guidelines for the Design for Emergency Rooms by ISPESL (Italian Institute for Prevention and Job Security) [19], architectural spaces for health interventions are divided into several areas (*Figure 2*):
• emergency areas;
• outpatient areas;
• short stay observation areas;
• short recovery areas;
• sub-intensive care areas;
• areas for staff training;
• areas for controls.

These emphasize the patient's diagnostic treatment taking into account the need for continuity of care in the emergency-urgency department. The activities planned in the hospital are done through specific areas for access, for triage, for waiting areas, for medical treatment, as well as through technical spaces and areas for social workers.

From the patients' perspective, however, the most significant spaces in emergency rooms are the waiting areas where people can be stationed for several hours, and medical rooms; for this reason, the questionnaire focuses its attention on these topics.
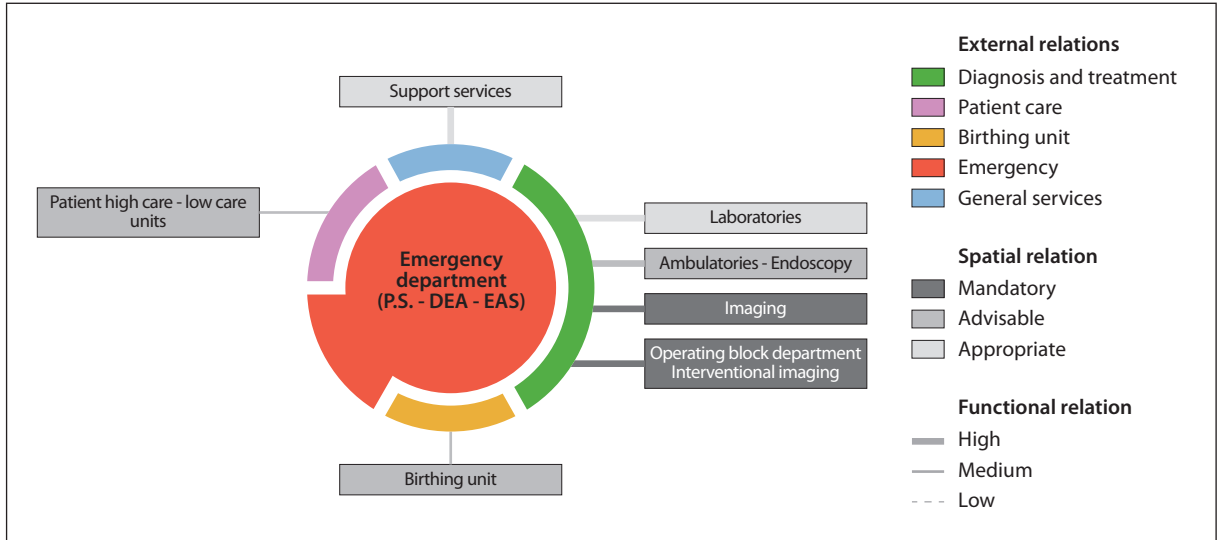
**Figure 1**
External functional relations of an emergency room within a hospital complex.

## METHODOLOGY

The research work can be subdivided into three phases.

The first phase concerns the investigation of the current scenario connected to the humanisation of hospital spaces, in particular emergency departments, analysing relevant topics of the State-of-the-Art and conducting several interviews to people involved on this subject. This operation led to a basic knowledge that was integrated by analysing social aspects studied through some evaluation tools [20, 21].

This step also focuses attention on the comprehension of users' need, with particular consideration to people who pass through the emergency room, considering both physical environments and the emotional perception linked to users' emotions [22]. This analysis is complete with the evaluation of a Customer satisfaction questionnaire, usually employed in hospitals, starting from the definition of questions typically made in such environments for defining typology and a variety of topics oriented towards understanding potentialities and criticisms for the preparation of an assessment tool.
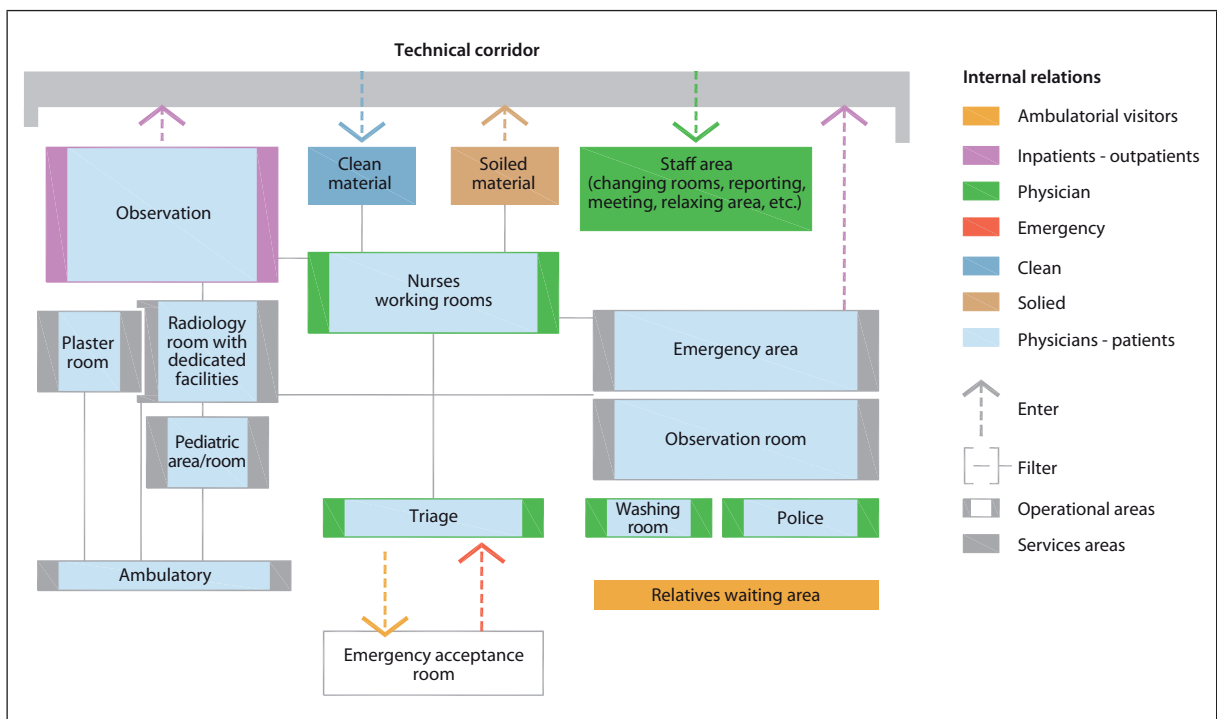
The second phase, instead, is oriented towards the



**Figure 2**
Internal functional relations of an emergency room.

definition of the questionnaires, their evaluation and data processing. The features of questions here can be highlighted into a few and clear questions on the humanisation, comfort and waiting time topics, preferring closed format questions for easier processing and to obtain strong outcomes that are statistically effective. Questions are differentiated according to whether users are adults or children, since the latter are more sensitive to comfort and humanisation issues [23]. Moreover, in order to guarantee the consistency of data values and viewpoints, the questionnaire is written in different languages such as English, French, Spanish, Chinese, etc. so that it can be filled out by people coming from different nationalities.

Observing other methodologies, the administration method is expected to be carried out on a significant number of patients equivalent to at least 10% of the annual average number of users of the emergency department; consequently, the papers have been distributed and withdrawn for several days until reaching that percentage.

Simultaneously to the second phase, a tool for data evaluation was developed. To test its validity and effectiveness, the tool may be subjected to modifications during the assessment and implementation phase.

### Tool

The outcome of the research is the definition of a tool focused on the investigation by means of questionnaires that are able to evaluate humanisation and comfort as perceived by patients in an emergency room's environments, while also underlining possible critical issues as fields of intervention for improvement strategies [24].

This tool is aimed at the analysis of existing structures, where their constraints can be considered as a limit for their qualitative innovation and where the active participation of users can help to identify feasible actions in order to improve their experience.

The proposed tool consists of questionnaires and a data processing worksheet which develops graphs and grades the overall quality of the emergency room analysed.

Questionnaires are differentiated according to the users and whether they are adults or children. The format is composed of a first section which contains general information to define the main characteristics of the respondents (sex, age, etc.). The second section focuses on the perception and experiences of users. These aspects are divided into three macro-areas (orientation, waiting times and medical rooms) and each of them is investigated through different questions as outlined hereunder:

*ORIENTATION*
- *Wayfinding*
  When you arrived at the emergency room, were you able to easily identify the place where you had to go (clear and comprehensive signs, visible and recognizable reception, etc.)?
- *Distribution*
  After the acceptance, did you easily understand where you had to go?

*WAITING AREAS*
- *Functional sub-division*
  Do you consider the subdivision of emergency room waiting areas into several areas as efficient?
- *Comfort and humanisation*
  Are you satisfied with the quality of public reception and waiting areas of the emergency room (i.e. comfort of the environments in terms of suitability of spaces, furnishings, colours, soft qualities, etc.)?
- *Waiting times*
  Are you satisfied with the waiting times (from the admittance to the medical consultation)?
  In total, how long did you wait? _____ min.

*MEDICAL ROOMS*
- *Comfort and humanisation of the medical rooms*
  Are you satisfied with the quality of the medical environments (privacy, colours, soft qualities, furnishings, adequate presence of natural and artificial lighting, finishing materials, etc.)?
- *Perception of the health service*
  Are you satisfied with the health services provided?
  Moreover, the questionnaire designed for children is filled out by a relative of the child who must express his/her own opinion as well as that of the child. Therefore, the paper presents additional questions on the experience of the child in emergency areas:

*WAITING AREAS*
- *Waiting time perception*
  Do you think the child has a positive perception of the waiting time in the paediatric emergency room (colouring, playing, etc.)?

*MEDICAL ROOMS*
- *Comfort and humanisation of the medical rooms*
  Do you think that spaces positively influenced the experience of the child?
- *Perception of the health service*
  Are you satisfied with the kindness and friendliness of the medical staff (humanity, availability, attention, etc.)?
  The questionnaire for both users concludes with general questions on the overall judgement of their own experience in the emergency room:
- *Overall judgement of the experience*
  Are you generally satisfied with the emergency department's environments and the assistance obtained from hospital staff (waiting, consultation rooms, courtesy, efficiency, availability, etc.)?
  Which suggestions would you like to propose for improving the quality and efficiency of the emergency room?
  These last questions are useful to define and confirm the outcomes of the evaluation on the aspects investigated.

Every macro-area is evaluated through questions and the answers are then classified according to three levels of satisfaction (satisfied, almost satisfied, dissatisfied).

The excel file processes data by returning different graphs for each type of user such as:
- a horizontal histogram which shows the average sat-

isfaction (satisfied, almost satisfied, dissatisfied) for each question;
• a pie-chart which illustrates the average rating of each macro-area.

The tool assesses the emergency room and creates a system for the responses of paediatric patients and adults. The score is assigned according to the mark obtained (range from 1 to 100) using the worksheet based on the average of responses, which considers the 100% of *satisfied* users and 50% of *almost satisfied* users). The rating scale is subdivided into:
• 81-100 excellent;
• 61-80 good;
• 41-60 sufficient;
• 21-40 insufficient;
• 0-20 extremely insufficient.

Starting from the graphs, it will be possible to deduce which areas of the emergency room are more critical than others from the point of view and perception of the user. This critical issue can be improved by implementing the comfort and the general warmth that a hospital environment can provide. Moreover, the final questions on the overall evaluation make it possible to verify the validity of the survey.

**RESULTS AND DISCUSSION**

The questionnaires were distributed in a Milan hospital with 600 beds and where the emergency room was recently renovated. Once a consistent, acceptable and assessable number of questionnaires were obtained, data collected were analysed through an Excel file [25].

For a proper investigation, the analysis was sub-divided into the two typologies of users (paediatric and adult users), as it is illustrated in *Figure 3* and *Figure 4*, while the final evaluation is given on the total of all the data.

It is worth noting that, despite the fact that the emergency room has been renovated in 2013, the overall rat-

ing is only "Sufficient" with a final score of 47.6/100: the percentage of people fully satisfied (as an average of satisfied answers) is equal to 18.5%, subdivided into 23.4% for adults and 13.6% for paediatric patients; the value of users, instead, for almost satisfied is 67.7% on average, subdivided into 57.1% for adults and 78.4% for paediatric patients. These results show that executive management should reconsider both the humanisation aspect of the architectural design as well as the social aspect of the entire service (process and quality of spaces) [26], which obviously does not provide the current layout with the ability to fully meet users' needs.

A further analysis of questionnaire results allows us to highlight the most critical aspects of the emergency room.

The first macro-topic is Orientation: it is a well-known fact that the ability to move and find one's way to the entrance of the emergency room is very important, and it is essential to be able to immediately identify a possible route that differentiates paediatric users.

As illustrated in *Figure 3 and Figure 4*, the analysis of the results of the Orientation section show obvious satisfaction with the signage and finding directions: in fact, patients found the main entrance and the first point for registration quite easily; however, significant discontent emerges on admittance with regard to the route to the triage and, if necessary, the medical rooms (44% of adults and 28% of children are not satisfied). Analysing the project from both the lay-out and site visit perspective, it is clear that there is a common disorientation when the user is called and asked by the medical staff to return from the waiting room to the medical room for the triage (in the emergency room, there are three rooms: two for adults and one for children) or to a specialised area [27, 28]. Lacking clear explanations, exhaustive information and adequate internal signage, patients often return to reception to ask for more infor-
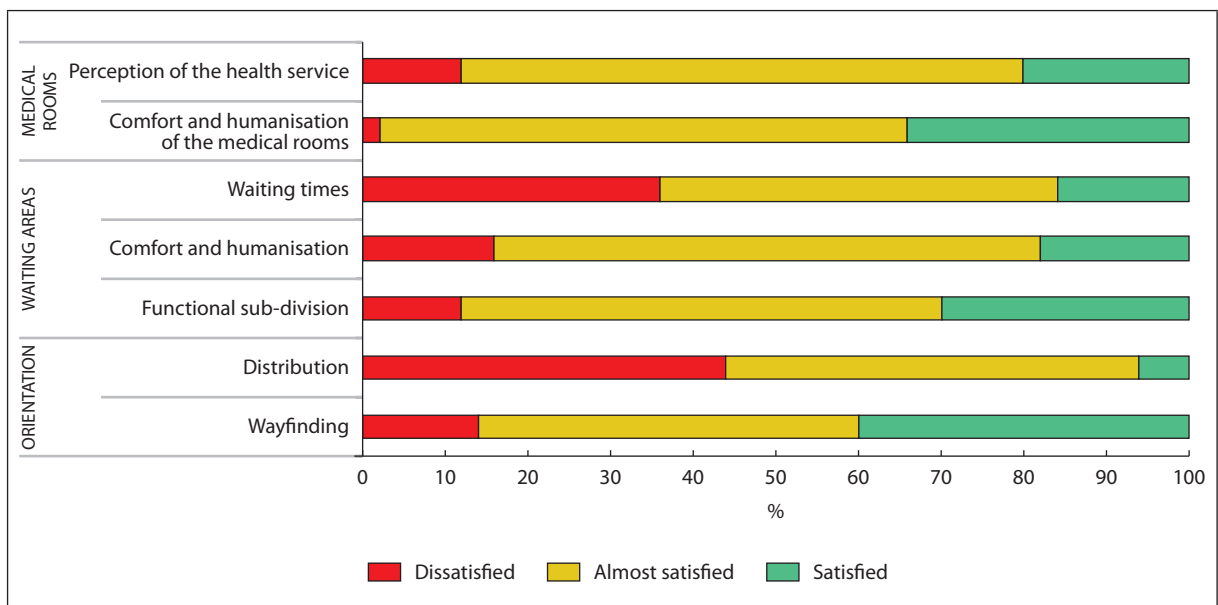


**Figure 3**
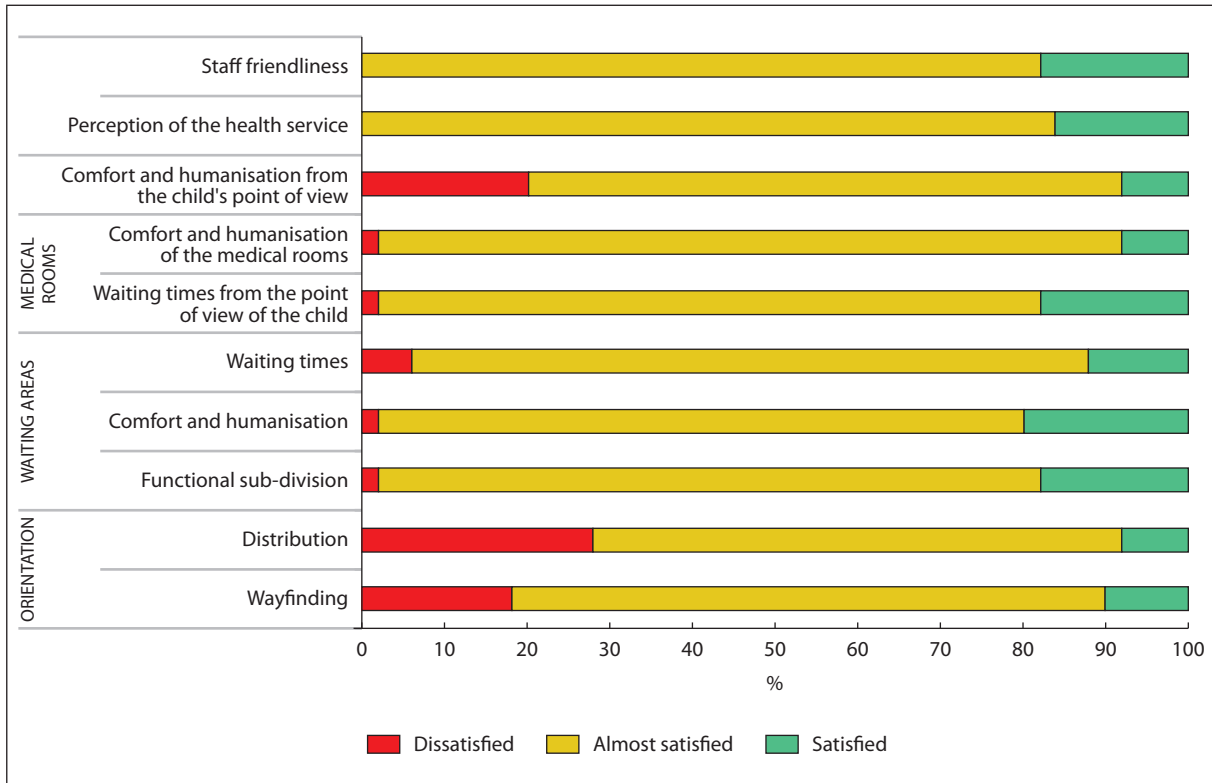Results of the adults' questionnaires.

**Figure 4**
Results of the children' questionnaires.

mation; as a result, this inefficient system causes anxiety and confusion in patients in reception area. This is because, apart from handling new registrations, hospital staff also have to manage and direct patients who are already registered [29].

Waiting-rooms are places where patients should be able to relax: this is an area where they wait anxiously and in pain and it is, therefore, fundamental to make the wait as pleasant and as stress-free as possible [30]. The general response among patients differs significantly between adult and paediatric users; children in fact are, on average, more satisfied with the spaces than the former: in particular, adults show an average discontent equal to 21.3%, which is attributable, however significantly, to the question on waiting times. 36% of these are not satisfied with the time interval from admittance to consultation. Functional subdivision and perceived comfort obtained good results. These confirm that respondents appreciate the structure, the project and its subdivision.

In paediatric patient results, the level of satisfaction is higher than average yet an average discontent equal to 3% is also registered. In this case, waiting time appears to be the main critical issue, with a dissatisfaction equal to 6%; however, children's perception results are better (only 2% of dissatisfaction). This is a clear sign that the environmental conditions of spaces have really alleviated the waiting time [31, 32].

An analysis of this department's waiting-rooms confirms that greater attention has been dedicated to the design of paediatric spaces: these environments are humanised and comfortable, with colourful walls, tables and chairs that are suitable for children as well as several games and drawings. Young patients are easily distracted and tend to be less anxious: that emotion is also transmitted to their relatives. As illustrated in *Figure 3*, it is possible to observe that relatives believe the children had a positive perception of all the environments of the new paediatric emergency room and reacted positively to the comfort in the spaces in terms of suitability, colours and furnishings which are designed specifically for young patients.

Triage control using a colour-coded system (white, green, yellow or red) takes place in the medical rooms with the possibility of more specialist visits. Such environments must have an aura of serenity because patients should be reassured and be able to clearly understand all information regarding their state of health. In both analyses of the medical rooms, there is an average satisfaction and a very low percentage of dissatisfaction (7% for adults and 5.5% among paediatric patients) [33]. The only negative data is registered from children's relatives in relation to the "positive influence" of medical room spaces from young patients' perspective.

This confirms the validity of the instrument. In fact, paediatric emergency rooms will be subjected to a second phase of redevelopment since children are currently examined in rooms for adults [34]. Although not studied for paediatric patients, these rooms received positive responses from relatives with regard to environmental quality for privacy, soft qualities, furnishings,

finishes, the presence of adequate natural and artificial light, etc. However, remarks show a need for a design that is more oriented towards the paediatric patient and the negative percentage is precisely due to this fact.

A very important aspect related to paediatrics is data on paediatric staff's friendliness: all responses were "satisfied" or "almost satisfied" which proves that friendliness, hospitality and social aspects in the paediatrics area are given importance by the establishment.

In conclusion, the tool has proved to be an efficient verification of the policies of humanisation of a structure, and the identification of critical areas that need intervention strategies. Due to planned interventions relating to clear internal directions, greater efficiency for waiting times and adequate implementation of paediatric medical rooms, a patient's emergency room experience could, in fact, improve significantly [35].

It would also be useful for the chief medical officer to systematically repeat this assessment in order to verify the effectiveness of interventions or the onset of any new criticism.

## CONCLUSIONS

This research has investigated aspects of humanisation and soft qualities within an emergency room area. Possible criticisms have been identified despite the fact that humanisation is a key element which most evaluation systems nowadays do not take into consideration in terms of building efficiency [36, 37]. As mentioned above, the analysis has been applied to an existing structure and the tool is therefore strategic because some choices could be improved in order to implement quality and efficiency in the healthcare facility [38, 39].

Starting from these considerations, the social issue becomes a fundamental and essential aspect, especially in such a sensitive place as the emergency area, where patients and users are in a psycho-physical state of distress. Through the distribution of questionnaires for adults and children, it was possible to demonstrate that humanisation and comfort aspects are critical. Strategies are needed to improve their systems and projects, with the identification of the most critical aspects of comfort, social aspects and humanisation levels and the need for enhancement strategies.

The aim of the sampling tool, which can be applied to several case studies, is to enhance hospital awareness on ways to improve humanisation and comfort aspects. This, considering that sometimes only a few and low-cost operations are necessary to enhance users' perception. Therefore, by sensitising through a co-design between structures and users, it would be possible to create an environment that is able to meet the needs developed within [40].

The continuous research and improvement of a tool that is able to collect the impressions, perceptions and waiting times of users in an emergency room in a quick and effective manner can become useful to create a comfortable place for the care of people.

### *Conflict of interest statement*

There are no potential conflicts of interest or any financial or personal relationships with other people or organizations that could inappropriately bias conduct and findings of this study.

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