

Taking Advantage of Single Patient Rooms as a Major Support for the Healing Environment System in Egyptian Hospitals

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Abstract: It is highly recommended to put the healing environment into consideration during the architectural hospital design process, due to its major effects on patients' wellbeing outcome and the staff and visitors' satisfaction. The healing environment components include (for example but not limited to): - The social support measures such as private seating area for family groupings and accommodation zones for family members. - Eliminating patient stressors as (reduce noise, enhance privacy concern, vary light levels to reduce the negative feeling and reduce eye fatigue). - Positive distraction such as (music, entertainment, colour). - Sense of personal control such (lighting level, room temperature). - Engender feelings as (peace and hope, reflection and spiritual connection). - Connecting the patient to the natural surrounding views such as (water elements, outdoor views)[1-6]. This study will review and indicate the necessity and importance of implementing the single patient room system as one of the major elements of the privacy factor, which is included in the healing environments of hospitals[4, 7-11]. Additionally, this work will analyse the risks and disadvantages of using multiple patient rooms in the health care system in Egypt and Arab countries.

Keywords: Healing Environment, single patient room, healthcare facility design, and patient room design.

I. INTRODUCTION

Healing architecture or healing environment for healthcare facilities describes a physical setting that supports patients and families through the stresses that develop as a result of illness, hospitalization, medical visits, the healing process or bereavement. The concept implies that the physical healthcare environment can make a difference in how quickly patients recover or adapt to specific acute and chronic conditions that is mean health care without harm.

More than 10 years ago, there was a significant challenge worldwide to change the perspective of the official decision makers, commissioners, and the consultants responsible for developing the health facilities guidelines and codes about how to construct new hospitals[12, 22].

The Egyptian Citizens have a different Culture and common customs and traditions such as a large number of Visitors, sometimes a noisy visitors, using nursing units Corridors, high emotion (crying or laughing), using the patients room toilet and the patients' beds for sitting, different levels of Hygiene, they have honour and dignity ...etc. Yet, the governmental and private hospitals in Egypt have a few numbers of single patient rooms

per each nursing unit. So, the patient should pay an extra charge (if affordable) to reserve a private room if available. In addition to, the negative impact on some patients as a result of some hospital administrations considering single rooms for the elite only. Therefore, this study will clarify the importance of single patient rooms as a major support for the healing environment system in the Egyptian hospitals. Additionally, to what extent the double and multiple patients' room are costly, contrary to what is expected.

II. AIM

Some main objectives for this work are: a) To Indicate and highlight the advantages of a single patient occupancy room and disadvantages of multiple patient rooms. b) To prove using Evidence-Based calculations and evaluations, that the single patient rooms in new hospital construction is feasible and has a strategic positive return. c) To emphasize that, the single patient room can become an isolation room in case of pandemics such as COVID-19. d) To include the paper's conclusions in the Egyptian code for hospital new construction. Data collected within 43 years of experience in clinical Engineering and hospital strategic planning, were used in order to facilitate achieving the aforementioned objectives. In addition to: a) four international standards such as (AIA, FGI), b) two health care facility guidelines such as (IHFG, UAE Code), c) many scientific publications and governmental reports in the same context and d) pilot study targeting 300 patients with different social levels and in different Egyptian hospitals.

III. THE NEGATIVE EFFECT OF MULTIPLE / DOUBLE PATIENT ROOM ON OCCUPANTS

III.1 Negative Effect Factors[13, 14]





Figure 1: Interior shot for healthcare treatment in a two-bed hospital room.

III.1.1- Noise and Stressors:

It stems from the patients themselves according to the various personal traits and desires, and different kinds of activities they prefer. These variables include:

- Snoring during their sleep
- A number of patients need to watch TV while others want to sleep or calm down.
- Different channels and TV programs.
- Some patients are loudly using the toilet for several times a day, due to their culture or medical cases.
- Several patients are being hurt out loud while others need to sleep.
- Some patients talk too loudly spreading negative energy, and move the furniture violently.

Moreover, some negative influences come from the visitors during the visit time or maybe out of the visit time. These effects may include, the negative use of nursing unit corridors according to the different cultures, using the mobile phone loudly.

III.1.2- Privacy:

The double or multi patient rooms will deprive the patient of his privacy in many aspects such as:

- Personal space (physical privacy).
- Personal data (informational privacy).
- Personal choices, including cultural and religious beliefs (privacy of personal decisions).
- Personal relationships with family members and other intimates (Social privacy).

III.1.3- Infection

It is largely caused by the usage of the same fittings by many patients, as water fixtures (e.g., sinks and toilets), furniture and TV remote control, which are potential sites for many airborne and blood-borne pathogenic microorganisms. In addition to, 10% hospitalized cases of influenza virus infections [13].

III.1.4- Night Medical Request

This procedure does not have a specific time and often

causes inconvenience for other patients, in addition to the lack of confidentiality and privacy for the patient.

III.1.5- Confidentiality:

Doctors and patients are supposed to be able to disclose sensitive information and medical history. This kind of multiple patient rooms' lack of privacy and other patient (neighbour) being able to hear and see social and medical issues.

III.1.6- Maintenance Issues:

This measure will cause a disturbance. Therefore, it is better to have one patient instead of several.

III.1.7- HVAC control:

Some patients need low temperatures, while others feel cold.

III.1.8- Medical staff:

No satisfaction for the medical staff which leads to a higher opportunity of medical errors occurring.

III.1.9- Dignity:

Multiple Patients' room reduces the sense of dignity, especially when embarrassing medical procedures are needed in front of other patients.

III.2- Single Patient Room Costs:

The cost of health care delivery, and also the annual budget for service development, is of great importance for health care administration.

Before the global pandemic COVID-19, the conversion of multi patient rooms into single rooms (in existing hospitals), was studied to represent from 50% to 100% of the total hospital rooms. Additionally, the cost of setting up single patient room hospitals (for new construction) was also calculated [15, 16].

COVID-19 is a great lesson to be learned regarding the costs and as a result of these lessons, this paper will not be subject to any cost calculation. Where it is known that, the first injected budget in Egypt to recover from the side effects of COVID-19 is about 100 Billion EP, which is approximately enough to build-up a 100 new hospital 200 beds capacity. This budget is not the only expense, but also there are other expenses regarding – for example – Economy issues, Irregular employment support, construction of field hospitals, Emergency in Health care sector, Vaccines for citizens, etc. So, the difference in cost between the construction of new hospital using single patient rooms or multiple patients' rooms will be found negligible compared to the total amount spent to face the Pandemic. Fortunately, the national project of dignified life (which greatly protects human rights), and the National Strategy of Human right have been launched, which implicitly supports the main objective of this work to make single patient rooms mandatory in new medical facilities.

III.3. All collected research, books, and standards have confirmed the Impact of single patient room on patient wellbeing and health care staff satisfaction (which leads to increasing the level of patient care delivery) [table 1], but some of them consider moving to single patient rooms in the newly constructed hospital a big challenge.

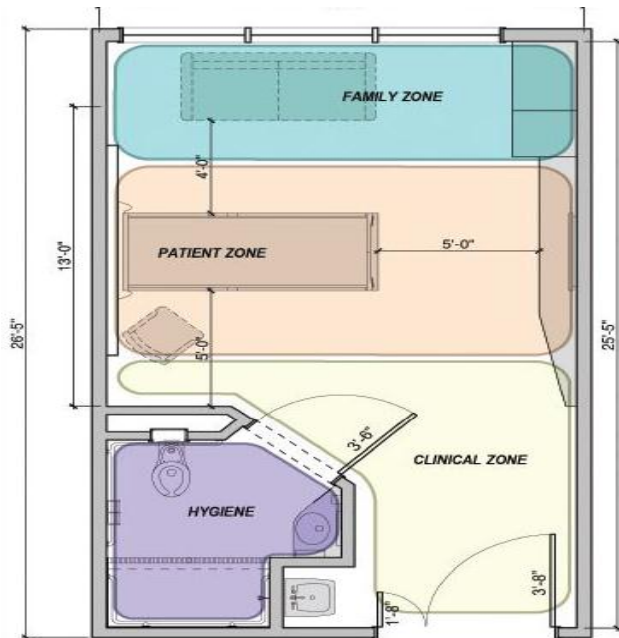


Figure 2: Using evidence-based strategies to design safe, efficient, and adaptable patient rooms.

Table 1: Issues and findings related to single versus multiple patient room

Issues	Single room	Multiple room
Occupancy Rates	↑	↓
Medication Error and Cost	↓	↑
Rate of nosocomial Infection	↓	↑
Infection when Patient Transfers	↓	↑
Patient length of stay	↓	↑
Infections in burn Patients	↓	↑
HCV transmission Between Patients	↓	↑
Transmission of Hospital acquired Diarrhoea	↓	↑
Falls in Patients requiring supervision	↓	↑
Privacy	↑	↓
Medical Errors	↓	↑
Confidentiality	↑	↓
Noise Level	↓	↑
Crowding	↓	↑
Stressors level	↓	↑
Patient Satisfaction	↑	↓
Hospital Staff Satisfaction	↑	↓
Dignity	↑	↓
Patient Control	↑	↓

III.4. For master thesis, two pilot study through Questionnaires are being done and running, first one targets 300 end users/patients in different social levels in armed forces hospitals and MOH hospitals. Second one targets 250 engineers in different specialties and in particular the architecture engineers. In the first pilot study which concerns the patients, includes questions (for example but not limited to) in table 2 and 60 samples are collected up to now.

The Analysis of the collected 60 samples:

For items 1, 2, 4, 5, 6, 7, 11, 12 and 13 in table 2 regarding the paper aim, the first column (Answers) are considered positive results while the second column (Answers) are considered negative ones. Results are summarized in figure 3. The remaining four items in table 2 requiring patients' written opinions are discussed in table 3, and the final total result is shown in figure 4.

Table 2: samples of pilot study questions and patient's answers

1	Do you prefer a private room with private toilet?	Yes 58	No 2
2	Do you prefer an accommodation space for family or friends?	Yes 54	No 6
3	What is bothering you in multiple room?	...	
4	Does noise affect you?	Yes 60	No ----
5	Which lighting do you prefer?	Can be controlled 59	Normal 1
6	Do you prefer music in your room?	Yes 58	No 2
7	Do you prefer to choose the TV programs of your desire?	Yes 60	No ----
8	What do you like about the view of your room?	
9	What is your imagination about the hospital garden or landscape?	
10	How many visitors per day?	
11	Do any of your visitors use the toilet in the room?	Yes 42	No 18
12	Do any of your visitors use your bed for sitting?	Yes 52	No 8
13	Have you been visited by patient with a flu?	No 51	yes 9

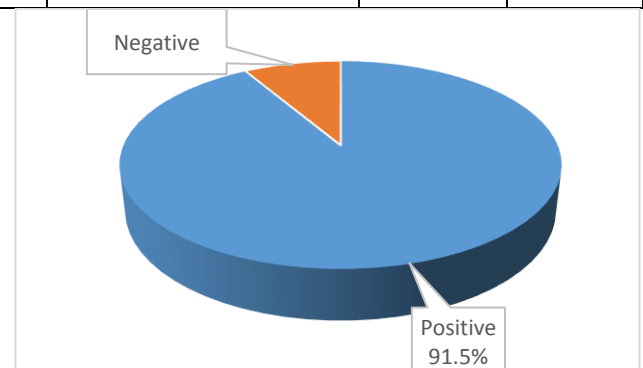


Figure 3: Results of the end users' collected samples except opinions questions.

Table 3: Samples of pilot study questions and patient's opinions answers

3	What is bothering you in multiple room?	Other patients noise, infection, Shared toilet, different desires for TV programs, doctors' visits of other patients, room temperature, no privacy and dignity and other reasons. 58	Nothing 2
8	What do you like about the view of your room?	Natural view 60	0
9	What is your imagination about the hospital garden or landscape?	Garden with seats, fountains, and nightlight and other ideas. 59	1
10	How many visitors per day?	More than two visitors 52	0-1 visitor 8

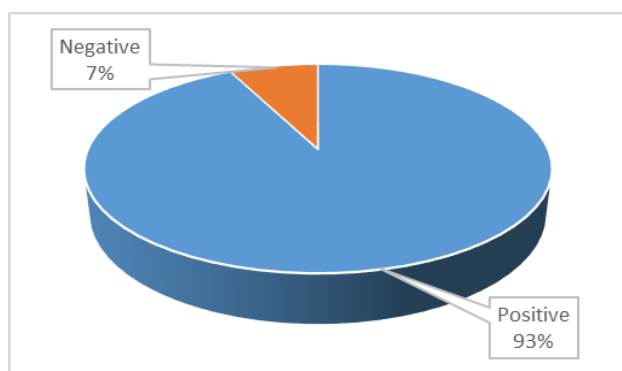


Figure 4: The total result of the end users' all collected samples.



Figure 5: Smart hospital rooms at Stanford utilize technology to create a streamlined and connected patient experience

IV. DISCUSSION

The results of the pilot study through Questionnaires that was done showed the following:

- 93% of the respondents supported their treatment in a single patient room, due to their severe suffering by being in the multiple room and their fear of infection, and 7% do not care about it. By comparing the results of a pilot study and the reviewed latest literature, the Author found a match in the results, which confirm the goal of the paper.
- Majority of the searched references showed the necessity of the single patient room for its effect on patients and the hospital staff as:

- The single Patient room will increase the inner-staff / patient communication such as: Doctor / nurse communication, Doctor / patient communication, Doctor / family communication, Nurse / patient, Nurse / family.
- Better infection control, as isolation decreases risk of disease / bacterial transmission among patients.
- Increased patient satisfaction and well-being.
- Essential support for patient dignity.
- Improved privacy (visual & auditory).
- Environmental control/comfort.
- Increased social support: More opportunities and space to Socialize with friends and family.
- Limiting medical errors and enhancing the patient's safety.

- Some Patients prefer multiple patient rooms and Dr. Chris Isles (University of Aberdeen, Aberdeen, UK) [18], says many patients seem more worried about being lonely in hospitals and should be given the choice of a shared room if needed. On the contrary, this paper has different opinion and comment, focusing and highlighting infection control, patient safety and the different cultures of the patients in multiple patient room, and also the Medical staff satisfaction and medical errors to be considered.

So, the author should ask, why are patients required to share rooms with strangers? why do we deprive them of their privacy, confidentiality, dignity? why do we force patients to share germs with each other and expose themselves to airborne infections? why do we deprive the family of staying with their patient? why do we respect the privacy and the dignity of hotel guests and forget about our patients inside the hospitals while they are paying much for medical and hotel services?

V. CONCLUSIONS AND RECOMMENDATIONS

The paper found that single patient rooms have a strong effect on patient satisfaction with care, noise and quality of sleep, and the experience of privacy and dignity.



Figure 6: Mission bay medical centre reflect latest research on how design affect health outcome.

Other researchers concluded that single rooms decrease the risk of hospital infections. Some few studies did not show significant differences if single patient room or multiple. But the researcher considered it necessary to emphasize the health and psychological condition of patients and protect them from infection, and consequently protect the country, especially since hospitals are considered a potential source of the spread of any epidemic, Putting in account the patient' negative cultures.

Future research should build the body of knowledge on single-bedded rooms in order to explore their impact on well-being and healing on both patients and staff. Also the effect of single rooms on management of care should be explored. The paper should support political decision making to initiate improvements in patient housing and quality of care by single patient room accommodations.

As matched results of the pilot study (93%, 7%) shown in Figure 4, and the reviewed latest literature [VI], confirm the goal of the paper.

The author recommends the following:

- 1) Giving opportunity to MOH decision makers and the political administration for Egypt to be one of the first countries in the world to take this decision.
- 2) Major support for the healing environment system in Egyptian hospitals.
- 3) One of the main objectives of this work is to include its results in the Egyptian Code for new hospitals construction, especially nowadays the Egyptian government has the political will to do so.

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