

SPECIAL ARTICLE

Interior design in cancer care: simple structural solutions in storey houses improve patients' quality of life, mood and performance

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Summary

Storey duplex houses are today one of the fastest growing housing market. The key of success is that this kind of house architecture presents esthetic and practical advantages in the average family daily life, but its narrow indoor staircase connecting the ground floor (floor of family activities) to the "bedroom floor" may constitute a potential detriment for the care and quality of life of patients with advanced cancer. Due to cancer cachexia, cancer pain and asthenia, the patients' incapacity to use narrow stairs will become soon an impassable barrier. Alone at the bedroom floor in solitude, depression, months /years exclusion from family daily life, and incapacity to reach medical care services

harm not only their quality of life but also the same survival outcome.

Creation of a provisional functional room at the ground floor (by low cost easily-removable aluminum door and aluminum panels) enables patients to return to family life, improve their mood, quality of life and likely survival.

Concluding, in the era of storey houses housing markets, homify and interior architecture design interventions may represent a new cost-effective horizon in cancer care.

Key words: cancer, storey, split houses, maisonettes, interior design

Introduction

Storey duplex houses are today one of the fastest growing market around the globe. The key of success is that this kind of house architecture presents esthetic and practical advantages in the average family daily life [1]. Nonetheless, its narrow indoor staircase connecting the ground floor (floor of family activities) to the first floor (bedroom floor) may constitute a potential harm in the overall care and quality of life of patients with cancer, especially in the presence of advanced-stage disease, comorbidities and among older cancer patients (Figure 1).

Indeed, more than 70% of patients with advanced cancer are affected by fatigue malnutrition, cachexia and cancer pain. These underestimated conditions [2-4] severely jeopardize patients' psychology, mood and performance in daily activities. The incapacity to go downstairs from the "bedroom floor" to the "floor of family activities" through the narrow indoor staircase becomes soon an impassable barrier for patients living in storey houses, and patients tend to be "left" at the bedroom floor. Solitude and depression are unavoidable. The incapability to reach the

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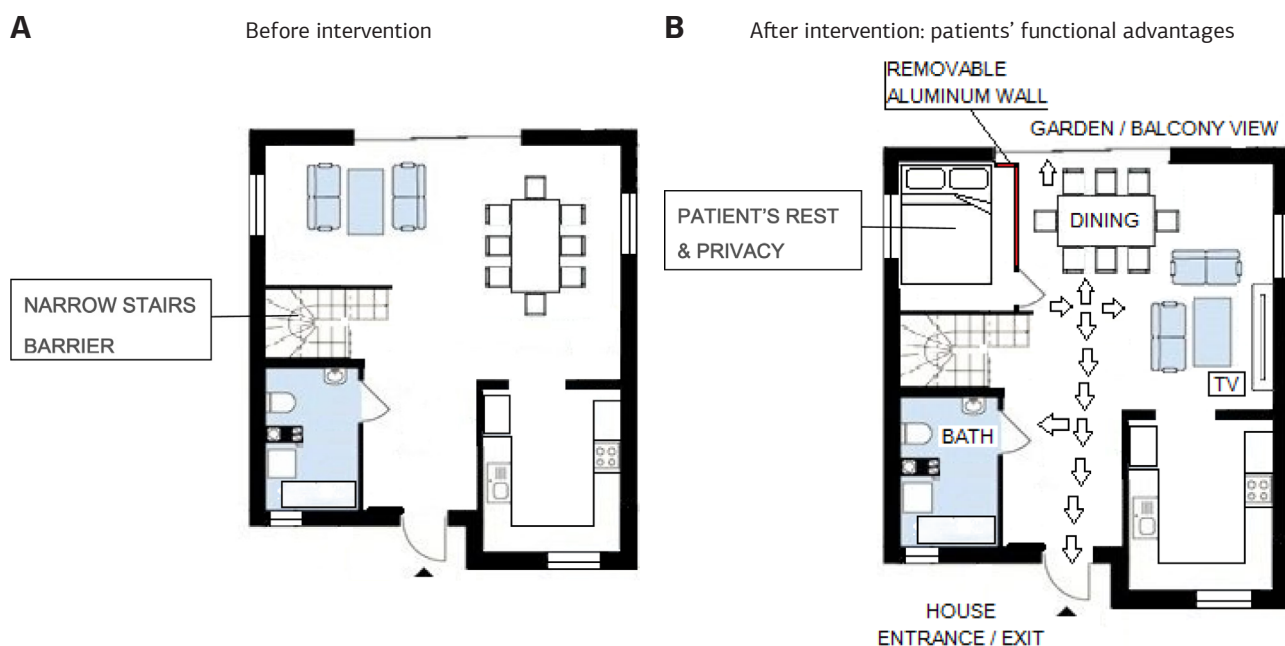


Figure 1. Example of the ground floor of a small duplex two storey house: **A:** before intervention. **B:** after intervention the patient within few steps can reach family-life (kitchen, dining room, living room, TV, bath and balcony) and the outdoor activities (main door).

“floor of family activities” excludes these patients from family daily life for the last months/years of their life, they will eat alone, they will not be involved in family discussion, decision-making and programming... “just alone!!!”... Patients will become a passive family member at the bedroom floor, incapable for any important decision. Of note, the difficulty to reach the ground floor will become the limit to reach the door to go outside the house, to see the external world and to reach medical departments to get medical care. Thus, for these patients, the incapacity to reach their medical/palliative care service harms tremendously not only their psychology, mood and quality of life but also the possibly delivery of care and consequently the survival outcome itself.

Many families try host their patient in the living or dining room at the ground floor and lay them on the uncomfortable couch or a provisory cot for sleeping. No doubt, despite of the unpleasant sleep, this seems a better solution than the former. Nonetheless, the lack of privacy for a frail cancer patient (who generally needs longer sleep and resting hours, and might even have complications due to their underlying disease - vomit, nausea, hemorrhages, need of fleet enema to evacuate, etc.), will soon become a paramount problem that severely impacts the quality of life of the same patient and the rest of the family members (children, sons, grandchildren, etc). Thus, after a while, these patients will be re-hosted at the bed floor to avoid to jeopardize the entire family integrity.

Alternative solutions have been proposed, such as stairlift chair. Nonetheless, stairlift is not the solution for the advanced cancer patient. Stairlift use is almost impossible for cancer patients, especially for those in advanced stage of disease. Malnutrition, cachexia, fatigue, asthenia and painful conditions will become soon insurmountable barriers to maintain the posture needed by the stairlifts. Then, what to do?

The case

We here report the experience of a 76-year-old cancer patient with advanced metastatic cholangiocarcinoma and extensive peritoneal carcinomatosis with recurrent ascites, living in a storey duplex house.

On May 2019, cachexia and patient's weakness together with the narrow indoor staircase became a major problem to overcome. Both the capability to reach the ground floor for family daily life and the possibility to reach medical services to get evacuative paracentesis of ascites and medical treatment/palliation were notably impaired. The patient felt like a foreign body within the family, felt himself as a problem/obstacle in his family daily life. He got nervous, closed, depressed. After a discussion with relatives and medical personnel, it was decided to host the patient at the ground floor. Since duplex storey houses have adequately large living-rooms, the option to create a functional easy-removable room of only 9 m² within the framework of the liv-

ing room was adopted in order to host the patient and his wife at the ground floor. The functional room, simply realized with aluminum panels and an aluminum door, was furnished with some accessories that were present in their original bedroom at the first floor (a double-bed, two bedside tables, two coat racks, a chair, a table, a cosmetic synthetic tree, two paintings for the wall and some pictures). The possibility to host both the patient and his wife was a major priority in order to avoid breaking the family unit (two spouses) and guaranteeing daily life conditions as closer as possible to usual daily life... "and patient returned to life". He had his privacy for his rest, sleep and medical needs. Within few steps outside the door of his room he could reach family-life (eat together with the other family members, see grandchildren and narrate them novels, he could see television with the other family members), he could have his authority and give his opinion and experience in decision-making for family questions. He could go outside the house and have some car-trip around the city, he could get medical care, palliation and ascites paracentesis whenever he needed, for the last four months of his life. He just came back to his life, with his humor and his smile.

Discussion

Are mini-architectural interventions a new horizon in cancer supportive care?

Patient care are the services rendered by members of the health profession and non-professionals under their supervision for the benefit of the patient [5]. Providers must be able to understand the

patients' diverse health care needs and preferences and communicate clearly with patients. In this view, homify and mini-architectural interventions may represent a simple and novel cost-effective solution in cancer supportive care for those patients living either in duplex/triplex storey houses, either in older architectural fashion split-level houses.

The positive psychological impact in our patient was astonishing. His mood, performance and quality of life were notably improved... the patient and his family return to their regular life!

Provisional easy removable functional room may be optimally designed in order to be near the bath, the kitchen, the dining room, the balcony and the main door of the house in order to have the maximal functionality. These rooms may be allocated in 2-3 hours work, and removed in one hour without any structural damage to the house. Their use is of benefit independently by patients' malnutrition, cachexia, fatigue, asthenia and painful conditions. Its standard door dimension allows the use of patients' wheelchair whenever required (Figure 1). The comprehensive cost of the room (door, aluminum panels and installation) that ranges from 1000 to 3000\$ is notably lower than that of stairlift [6].

To conclude, in this era of storey house-based growing housing markets, we believe that homify and interior architecture design interventions may markedly improve cancer patients' mood, performance, quality of life and potentially survival itself.

Conflict of interests

The authors declare no conflict of interests.

References

1. Loveridge J. Building a Double Storey Home: Top Interior Design Tips. Express living Homes February 12, 2016. <https://expresslivinghomes.com.au/new-home-building-hub/building-your-home/building-a-double-storey-home-top-interior-design-tips>
2. Mauri D, Tsali L, Polyzos N et al. Facing internet fake-medicine and web para-pharmacy in the total absence of official recommendations from medical societies. JBUON 2019;24:1314-25.
3. Mauri D, Zafeiri G, Yerolatsite M et al. Global Coverage and Consistency of Guidelines Recommendation for Cancer Cachexia on the Web in 2011 and 2018. *Contemp Oncol* 2019;23:100-9.
4. Mauri D, Kalopita K, Tsali L et al. Cancer pain... who cares? International and national patterns of evidence-based global guidelines recommendations for physicians on the Web (2011 vs. 2018). JBUON 2020;25:62-73.
5. Dorland, Dorland's Illustrated Medical Dictionary 28th Edition, p269.
6. Retirement living. How Much Do Stair Lifts Cost? January 2, 2019 <https://www.retirementliving.com/how-much-do-stair-lifts-cost> (lastly accessed 13/08/2019)