

## Research Article

# Loneliness among Older People in Hospitals: A Comparative Study between Single Rooms and Multi-Bedded Wards to Evaluate Current Health Service within the Same Organisation

Singh I<sup>1\*</sup>, Subhan Z<sup>1</sup>, Krishnan M<sup>2</sup>, Edwards C<sup>3</sup> and Okeke J<sup>1</sup>

<sup>1</sup>Department of Geriatric Medicine, Aneurin Bevan University Health Board, UK

<sup>2</sup>Consultant Stroke Physician, Abertawe Bro Morgannwg University Health Board, Wales UK

<sup>3</sup>Consultant Clinical Scientist, Academic Dermatologist, Aneurin Bevan University Health Board, UK

\***Corresponding author:** Inderpal Singh, Consultant Geriatrician, Department of Geriatric Medicine, Ysbyty Ystrad Fawr, Aneurin Bevan University Health Board, Wales. UK

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## Abstract

**Background:** Healthcare design professionals and new hospital design policies favor single rooms over traditional Multi-Bedded Wards (MB-W) for greater dignity, personalized care and infection control. Higher incidence of inpatient falls has been reported in single rooms but an impact on the perceived isolation and loneliness is not very well studied.

**Objective:** To compare perceived loneliness among older people treated in single rooms and Multi-Bedded Wards (MB-W) within the same organization.

**Design:** A semi-structured interview was conducted to measure medical comorbidities, functional status, social activity and cognitive function. Validated scales: Hospital Anxiety Depression Scale (HADS) were used to measure anxiety/depression in the both the hospital sites and perceived loneliness was measured using validated three-point loneliness scale both as in-patient and in the community before admission to the hospital.

**Setting:** Ysbyty Ystrad Fawr (YYF), a hospital with 100% single rooms, and the Royal Gwent Hospital (RGH), with MB-W. Both are under the Aneurin Bevan University Health Board (ABUHB).

50 patients aged 65 and over admitted to each site with an acute medical illness, recovering and able to give informed consent were included. Only patients with severe dementia, delirium or receiving palliative treatment were excluded.

**Results:** There was no significant difference in the 3-point loneliness score in the community (MB-W=4.16±1.55; single-rooms=3.66±1.39, p=0.9). But patients felt more lonely in single rooms (4.48±2.10) as compared to MB-W (3.72±1.14) and this was significantly higher (p=0.02). Furthermore, following the hospital admission, older people felt less isolated and lonely in MB-W and felt lonelier in single rooms and this was significantly different.

**Conclusion:** In this study, patients admitted to single-rooms reported significantly higher loneliness as compared to MB-W. Loneliness increased significantly following the admission to single room as compared to the pre-admission level. We recommend that impact of isolation in older people should be taken into consideration in deciding the percentage of single rooms in the new hospital design.

**Keywords:** Loneliness; Ageing; Older people; Single-rooms; New hospital design

## Introduction

Worldwide populations are ageing and hospitals are admitting increasingly older people [1]. There has been an emphasis on maintaining dignity for older patients in the hospital, but older people often do not receive the dignified care in the hospitals. Multi-Bedded Wards (MB-W) wards are poorly designed, confusing and inaccessible for older people [2]. Older people were bored through lack of communal spaces and activities. Furthermore, concerns have

been raised about the close proximity of patients of the opposite sex [2]. Healthcare design professionals favor single rooms over traditional MB-W for greater dignity and personalized care. This is supported by the new hospital design policies which tend to favor the construction of the single rooms for new acute care hospital designs in many parts of the world including the United States and the United Kingdom [3-5]. Single rooms do not only reduce the risk of hospital-acquired infection but also facilitate staff efficiency.

At present just under one-third (30.7%) of NHS beds in England are single rooms [6] while in Scotland's 218 hospitals, 32% of the total beds are now single rooms and the proportion of single-occupancy rooms in NHS hospitals is rising steadily [7].

The aim of single rooms is to deliver a high level of dignity and minimizing hospital acquired infections. Despite the assumption that privacy, dignity and high levels of patient care are achieved by 100% single rooms, there is currently no hard evidence to support and justify these statements [8]. There is a lack of good quality evidence on the impact of this new service provision (single rooms) on the perceived loneliness [9]. Loneliness has been associated with depression [10], increased mortality risk [11], worse health behaviors and poorer health [12].

In 2011, Aneurin Bevan University Health board in Wales opened a new hospital, Ysbyty Ystrad Fawr (YYF) which has 100% single rooms with en-suite facility. This replaced two older hospitals with MB-W.

The new hospital admits a larger proportion of older people. The same health board also has another site, the Royal Gwent Hospital (RGH) in Newport, which is a traditional MB-W district general hospital. Both sites admit acute and subacute patients. The objective of this study was to compare perceived loneliness among older people treated in two different hospital environments: single rooms and MB-W within the same Health Board.

## Methods

### Study design and setting

This study was designed to measure patient's perceived loneliness using validated scales in the community and as an inpatient in two different hospital sites: a hospital (YYF) with 100% single rooms or a hospital (RGH) which has MB-W, both under the same Health Board.

### Participants

The sample consisted of 100 older patients aged 65 years and over, admitted to YYF or RGH, who were stable and recovering from an acute medical illness and able to give informed consent. The study was conducted between November 2013 and August 2014. Those who were unable to give informed consent due to acute confusion, delirium or dementia, or were receiving palliative treatment were excluded from the study. Patients whose hospital stay is less than 3 days were also excluded. To ensure that the sample was obtained correctly, medical teams in each setting were involved and informed of the inclusion and exclusion criteria. The participation in the study was completely on the voluntary basis and no patient was persuaded by any means to participate in the study. In case the patient has refused or agreed to participate in the study, patients were thanked and reassured that this will not affect current treatment.

### Measurements

Information was collated onto a standardized data collection form for each patient, allowing reproducibility. Individual patient characteristics were recorded from clinical notes or through a semi-structured interview following recovery from the acute illness. This included age, sex, Abbreviated Mental Test (AMT) score, Activities of Daily Living (ADLs) on admission measured by Barthel Index (BI), co-morbidity burden measured by Charlson Comorbidity Index

(CCI), social activity such as going out more than 3 times/week; living alone or with partner, support with shopping and medications. Validated scale: Hospital Anxiety Depression Scale (HADS) was used to measure anxiety/depression in both the hospital sites [13].

We found four validated scales to measure loneliness in the literature. The University of California, Los Angeles (UCLA) Loneliness Scale was designed to be self-administered; it has 20 items with four response categories each and is a commonly used measure of loneliness [14]. However, the scale is too long and complex to use. Therefore, we used the shorter, 3-item questionnaire version which has not only been widely used (original paper has been cited over 1,500 times) but also has been found to be accurate when it is part of a self-completed questionnaire and has been tested with older people [15].

The UCLA 3-item Loneliness scale comprises 3 questions that measure three dimensions of loneliness: relational connectedness, social connectedness and self-perceived isolation [15]. The scale generally uses three response categories: Hardly ever / some of the time / often. The scores for each individual question can be added together to give you a possible range of scores from 3 to 9.

The questions are:

1. How often do you feel that you lack companionship?
2. How often do you feel left out?
3. How often do you feel isolated from others?

The perceived loneliness was measured using validated UCLA 3-item Loneliness scale both in the community and following admission to the hospital.

### Data and statistical analysis

Data were anonymised and recorded onto a password protected Microsoft Excel spreadsheet to protect patient confidentiality. Data analysis was performed using IBM SPSS 20 and STATISTICA Stat Soft data analysis software system, version 9.1 (Statistica Inc., 2010). Data are presented as means  $\pm$  Standard Deviation (SD). In addition to descriptive analysis, loneliness was compared between two different hospital settings and sub-analysis was performed for the change in the loneliness following hospital admission. The level of statistical significance at which the null hypothesis was rejected was chosen as 0.05.

This study was to evaluate the impact of new service provision (100 % single-rooms) as compared to the existing service (multi-bedded wards), provided by the same Health Board. However, all questions and forms required to carry out the study were sent to the Research and Development (R&D) department at ABUHB, to assess risks to patient identification and the health board. R&D approved the study with no further need for ethical approval. The R&D decision was justified on the basis that this observational study was to evaluate current service and no personal information other than hospital identification number, date of birth and sex will be recorded for service evaluation purpose only and no personal identifiable information will be shared or published. Consent was still taken for this service evaluation in case patients need to be contacted or interviewed to complete any missing clinical data.

**Table 1:** Descriptive analysis of the two cohorts studied.

	MB-W	Single-rooms	p-value
Mean age (years)	81.6±8.85	81.54±9.40	0.97
Female %	54 (27/50)	74 (37/50)	0.03
Charlson co-morbidity Index	1.94±1.62	2.24±1.67	0.3
AMTS (Cognition)	7.84±1.57	8.06±1.86	0.5
Barthel Index	13.48±4.78	11.86±4.31	0.07
Social Activity %	42	32	0.3
Going out >3/week %	44	44	1.0
Living alone %	48	68	0.04
Needing help with shopping %	70	78	0.3
Needing help with medications %	58	48	0.3

## Results

Patients admitted to single rooms were frailer as suggested by multiple co-morbidities and functional dependence. A significantly higher number of patients in single rooms were living alone. The description of two cohorts studied is shown in (Table 1).

The mean HADS score was lower for those admitted to MB-W (10.78±6.17) as compared to those in single rooms (12.38±7.40) but this was not significantly different (p=0.24). The mean depression score was lower in MB-W (5.78±3.27) in comparison to single rooms (6.92±3.73, p=0.1) (Table 2).

There was no significant difference in the 3-point loneliness score in the community before admission to hospitals with either setting (MB-W = 4.16±1.55 and single rooms = 3.66±1.39, p=0.9). But patients reported higher loneliness in single rooms (4.48±2.10) as compared to those admitted to MB-W (3.72±1.14) and this was significantly higher (p=0.02) (Table 2).

Furthermore, following the hospital admission, older people felt less isolated in MB-W as suggested by the reduction of the 3-point loneliness score from 4.16±1.56 to 3.72±1.14 and this was a significant reduction of perceived loneliness (p=0.03). In comparison, older people admitted to single-rooms felt significantly more isolated as suggested by the increase in the 3-point loneliness score from 3.66±1.39 to 4.48±2.10 (p=0.01).

Sub-analysis was done based on the age, gender, and companionship in the community. Patients were divided into 3 different age groups: 65-74 years, 75-85 years and over 85 years and the mean 3-point loneliness were 4.14±1.98, 3.88±1.45 and 4.25±1.77 respectively. The perceived loneliness did not change significantly based on age (p=0.63). Women reported higher loneliness in both single rooms (4.76±2.22) and M-BW (4.11±1.40) as compared to men (single rooms = 3.69±1.55; MB-W = 3.26±0.45). Patients living alone in the community reported a lower level of loneliness following admission to hospital 3.86±1.50 as compared to those living with family/partner (4.43±1.97). After correcting for the effect of gender and companionship in the community, older people reported higher perceived loneliness in the single rooms (4.46) as compared to those in MB-W (3.74) and this was the significant difference (p=0.03).

## Discussion

Dignity is the one of the fundamentals of care for older people

**Table 2:** HADS and perceived loneliness scores in MB-W and single rooms.

	MB-W	Single-rooms	p-value
HADS	10.78±6.18	12.38±7.40	0.243
Anxiety	4.98±4.03	5.48±4.93	0.580
Depression	5.78±3.27	6.92±3.73	0.108
3 point loneliness scale-community	4.16±1.56	3.66±1.39	0.09
3 item loneliness- Hospital	3.72±1.14	4.48±2.10	0.02

and patients treated in single rooms with en-suite facility have reported increased privacy and enhanced dignified care [16]. There is an increasing trend towards single room patient accommodation in the acute setting. In the United States, policy documents recommend 100% single room citing advantages such as improved patient safety and privacy, reduced nosocomial infection rates, reduced medical errors and caregiver burden [17]. From the UK perspective, there has been a similar shift at national level towards providing a majority of single rooms in hospitals [5,18].

Single rooms meet the expectations of the public and government policies [3,16,19]. Single rooms could also positively impact patients' hospital experience through improved sleep hygiene, reduced noise level, better interaction between family and staff [3] and can minimize healthcare-associated infections [20-23]. But at the same time, lack of companionship in the single rooms has been reported. In this study, overall older people admitted to either site, felt lonely in the community but loneliness increased following admission to single rooms and reduces on admission to MB-W and this was a significant change. In addition, older people admitted to single rooms reported significantly higher loneliness in comparison to MB-W.

The disadvantages of the single rooms have been reported, including reduced social interaction, lack of companionship and less surveillance by nursing staff. The Sunflower Hospital befriending scheme has been implemented to overcome the loneliness associated with the single rooms in this hospital. The project was set up by Gwent Association of Voluntary Organisations (GAVO). All volunteers undergo necessary police checks, occupational health checks and receive mandatory training before coming in touch with the patients in line with the ABUHB policy. Patients admitted to hospital are at a greater risk of falling as compared to those in the community, however, the rates of inpatient fall observed in single rooms has been 2.5 times higher as compared to MB-W [24-25]. The inpatient falls in single rooms have also been associated adverse clinical outcomes including significantly higher hip fractures [26]. Most nations are facing a significant rise in the ageing population and an associated rise in the prevalence of dementia [1,2]. This inevitably places pressure on hospitals to provide safe inpatient stays for older patients, given that up to one-third of inpatients may have cognitive impairment [2]. Furthermore, older people with associated cognitive impairment have significantly higher incidence of inpatient falls in single rooms and adverse outcomes including discharge to a new care home and prolonged length of stay when compared to inpatient fallers with no cognitive impairment [27].

This study has certain strengths. Although work has been done on feeling of loneliness in the community and hospitals in the past but to our knowledge there is no study that has compared loneliness in older people across two different hospital settings: single rooms

and MB-W, therefore, the focus of the paper has an original question. This study provides a valuable benchmark for further studies in order to enhance the quality of care. Currently, in the UK there is an ageing population; patients aged 65 and over tend to occupy just over two-thirds of hospital beds [2], with an increased length of stay in comparison to those under the age of 65 [28]. The mean age of the patients in this study was 80 years in both groups. Therefore, this study also explores an important research question on feeling lonely and isolated among older people in the hospitals which have considerable implications for health policies for building hospitals with 100% single rooms.

We also acknowledge some methodological weaknesses. The major limitation of this study is a small number and the impact of acute illness and hospitalization on patient's loneliness was not measured. Patients were also not matched for the disease, but we have no reason to believe that this would have biased the results. Although measurements to assess function (BI) and cognition (AMT) were done following the recovery of the acute illness, we acknowledge that patients may not have achieved a pre-admission level of functional activities or cognitive abilities.

We have done the sub-analysis using three confounding variable including age, gender and companionship in the community but have not studied two other variable including nurse-to-patient ratio and environmental barriers. The nurse-to-patient ratio could impact loneliness in the hospitals and have also been associated with inpatient mortality in acute hospitals in the UK [29]. The environmental barriers could restrict older people participation in outdoor activity thus impacting loneliness in the community [30]. There is a significant positive correlation between perceived physical environmental barriers and mobility or ADLs [31]. We also acknowledge this as a limitation of the study and propose nurse-to-patient ratio and environmental barriers to be included in similar studies in the future.

In order to increase the reliability and validity of such study, this service evaluation could be repeated at the same two sites with a new cohort of patients. In the future, we would also suggest matching patients with indexed presenting disease and co-morbidities and looking for clinical outcomes including length of stay, depression or mortality in more detail. We, therefore, propose a larger sample size, involving more than one Health Board, which may provide a more comprehensive picture and increase the generalisability.

A study based on the semi-structured interviews investigated the preferences of patients, family and staff for single or shared rooms in the UK hospice. The main reason for patients to state a preference for a shared room was the company of others as compared to patients preferring single rooms cited the benefits of increased privacy, reduced noise and private facilities. The choice can also vary based on the illness. The staff suggested increased staff presence and social contact in shared rooms but felt that single rooms were easier for visitors and more appropriate when patients reached the end of life [32]. It will be challenging to balance dignified care against loneliness in the single rooms to meet the needs of acutely unwell old and frailer populations. Therefore generalized 'one size fits all' guideline should not be applied while designing new hospitals [33-35]. We recommend that impact of feeling lonely and isolated for hospitalized older people should

be taken into consideration by the healthcare design professionals, planners, and administrators before deciding the percentage of single rooms in the new hospital design.

## Conclusion

In this study, patients admitted to single rooms reported significantly higher loneliness as compared to MB-W. In comparison to pre-admission level, loneliness not only increased significantly following the admission to single room but it was significantly reduced for those admitted to a shared ward. We recommend that impact of isolation in older people should be taken into consideration in deciding the percentage of single rooms in the new hospital design. We acknowledge relatively small sample size as study's limitation.

## Authors' Contribution

IS contributed to study design, data interpretation and wrote the first draft. MK and ZS contributed to data collection. CE and JO contributed to data analysis and data interpretation. All authors contributed to the writing of the paper and approved the final version.

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