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ORIGINAL ARTICLE

Design in mind: eliciting service user and frontline staff perspectives on psychiatric ward design through participatory methods

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Abstract

Background: Psychiatric ward design may make an important contribution to patient outcomes and well-being. However, research is hampered by an inability to assess its effects robustly. This paper reports on a study which deployed innovative methods to capture service user and staff perceptions of ward design.

Method: User generated measures of the impact of ward design were developed and tested on four acute adult wards using participatory methodology. Additionally, inpatients took photographs to illustrate their experience of the space in two wards. Data were compared across wards.

Results: Satisfactory reliability indices emerged based on both service user and staff responses. Black and minority ethnic (BME) service users and those with a psychosis spectrum diagnosis have more positive views of the ward layout and fixtures. Staff members have more positive views than service users, while priorities of staff and service users differ. Inpatient photographs prioritise hygiene, privacy and control and address symbolic aspects of the ward environment.

Conclusions: Participatory and visual methodologies can provide robust tools for an evaluation of the impact of psychiatric ward design on users.

Keywords

Inpatient services, participatory methodology, psychiatric ward design, service user involvement, service-user perceptions

History

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Background

In the UK, government reports increasingly emphasise the importance of ward design for patient well-being and recovery (Department of Health, 2000, 2013). Yet the impact of the ward design on patient outcomes has been the focus of a relatively small, albeit growing, body of research (Ulrich et al., 2008). Research on psychiatric ward environments occupies a small fraction of this work, with some evidence that private spaces and a home-like atmosphere may contribute to patient well-being. Studies also indicate that patients and frontline staff may have conflicting expectations regarding ward design (Papoulias et al., 2014). These findings suggest we need to further investigate how different stakeholders relate to and perceive the same environment. Furthermore, current UK policy guidelines for the design of psychiatric wards recommend the involvement of service users in the planning and design of new services (Department of Health, 2013). However, while some studies have elicited

service user and frontline staff perceptions, no study to date has worked with users to create a robust tool for the evaluation of the ward environment.

A small number of tools for assessing the quality of healthcare facilities in the UK have recently been developed. These primarily address the needs of designers, managers and other professionals rather than end users (Department of Health, 2008a, b). Relying mainly on professional knowledge, and applying the same criteria to both general ward environments and psychiatric wards may result in designs unlikely to address the specific needs of mental health service users and frontline staff (Gesler et al., 2004). Yet, attentiveness to such needs and collaborative work with end users are increasingly recognised as key priorities for mental health strategies and for the development of new research projects in the UK and Europe alike (Callard & Rose, 2012).

The present study used an adapted version of the “SURE model” to elicit service user and staff perspectives on psychiatric ward design. The “SURE model” is a participatory methodology premised on collaboration with service users across all stages of a study (Rose et al., 2011). It is a mixed methods model designed for the development of patient generated outcome measures: measures are produced through participatory and qualitative methodology and are submitted to psychometric testing. Use of this model allowed us to capture service user and staff perceived priorities for psychiatric ward design, thus ensuring a holistic research

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approach. Additionally, our project involved an “autophotographic” study, undertaken to provide us with more in-depth data on inpatients’ experience (Douglas & Douglas, 2005). We hypothesised that the use of a camera might facilitate recruitment by making participants feel more involved in the process of research, allow for the negotiation of language barriers, and provide us with more in-depth understanding of service user experience of the wards (Cooper & Yarbrough, 2010; Wang & Burris, 1994). The study included exploration of inter and intra-group differences in the evaluation of the design of psychiatric facilities. Data on the demographic stratification of service user perceptions of ward design were scarce at the time of this project (Department of Health, 2009). We therefore based our hypotheses on previous research on perceptions of the inpatient care environment as a whole. Consequently, we expected that service users under section and those from black and minority ethnic (BME) groups may have more negative views about the physical environment of wards (Evans et al., 2012; Gould, 2012; Svensson & Hansson, 1994). Additionally, we expected more negative perceptions to be associated with younger staff members or those recently employed on the ward (Holahan, 1976; Whitehead et al., 1984). Finally, we anticipated that staff and service users might have different or conflicting views on the optimal ward design (Tyson et al., 2002).

Methods

The project had three phases:

- (1) Measure generation to explore staff and service user perceptions of ward design
- (2) Feasibility study and test retest of the new measure
- (3) Autophotographic study using inpatient photographs of the ward

According to the principles of the “SURE model”, two service user researchers surveyed the literature, performed the data collection and undertook a considerable part of the data analysis. In accordance with this methodology, one service user researcher had experience of the service under investigation; in this case, this was experience of seclusion in an acute psychiatric ward.

Sampling and recruitment

The study was given ethical approval by the Bexley and Greenwich ethics committee (REC reference number 07/H0809/49).

Data collection took place in 2012–2013 in four 18-bed adult acute wards in a large inner city NHS mental health Trust. Purposive sampling was deployed in the measure generation phase, reflecting inpatient and ward staff demographics. Inclusion criteria for service user participants were: presence on the ward for at least three days prior to data collection; ability to communicate in English; ability to provide informed consent. There were no diagnostic exclusion criteria. Inclusion criteria for staff were that they had been working on the ward for at least four weeks prior to data collection. About 56% of eligible service users and 64% of eligible staff agreed to take part in the feasibility study. All participating service users in two of the four wards were also invited to take part in the photographic study and 90% agreed.

All participants gave written informed consent. Demographic data were collected by self-report, while clinical data were collected from NHS records.

Phase A

Measure generation

Following a literature review, topic guides were created and used in semi-structured interviews with staff and service users on two adult acute wards. Interviews were audiotaped, transcribed and thematically analysed by two service user researchers independently using NVivo 9. While the topic guides were used to generate a code framework, transcripts were also analysed inductively in order to uncover supplementary themes (Braun & Clark, 2006).

Phase B

Feasibility and acceptability

Readability was assessed by the Flesch reading ease score (Flesch, 1948). Feasibility and acceptability were assessed by asking participants to rate whether they thought the measure was easy to understand and complete, of appropriate length, and covered all relevant areas.

Analysis

Psychometric evaluation. Internal consistency was assessed using Cronbach’s alpha coefficient (Cronbach, 1951). Item level test retest reliability was evaluated using the weighted Kappa (K_w) (Cohen, 1968) while Pearson’s (r) and intraclass (ICC) correlation coefficients were implemented for the total scores. For the overall score, random effects regression models were used to estimate the variance components between test and retest for staff and service user scales.

We also tested demographic variables as potential predictors for future hypothesis testing, using one-way ANOVA. As the item-level data were not normally distributed, nonparametric Wilcoxon rank sum tests were used to test for differences between staff and service user samples. According to power analysis, for 80% power and 5% significance level, a sample of 30 is required to detect correlations of 0.5 or lower while 90 individuals are required in ANOVA to detect medium effect sizes (0.3) between users and staff. All analyses were carried out using Stata 12.1 (College Station, TX) and SPSS 20 (Chicago, IL).

Qualitative data analysis: The free text responses on the two questionnaires were collated and thematically analysed by a service user researcher using NVivo9 (Doncaster, Australia).

Phase C

Photographic study

A service user researcher gave participants a point-and-click digital camera and asked them to take two photographs representing the best and worst aspects of the physical environment of the ward. Participants were asked to briefly describe their choices. Their accounts were audiotaped and transcribed. Both photographs and accompanying brief interviews were thematically analysed using NVivo 9 (Doncaster, Australia).

During all phases, participants were clearly told that the term “design” referred to the physical environment of the ward.

Results

Sample characteristics

Ten service users and ten nurses were recruited into the interview phase of the study (see Table 1a and b). Fifty-three service users and 61 staff were recruited into the questionnaire phase. Thirty six service users participating in the questionnaire phase also agreed to take part in the photographic study.

Measure generation

Themes which introduced confounding variables were excluded (e.g. an item on the levels of noise on the ward) and the remaining items were checked for duplication. The service user questionnaire initially featured 19 items, while the staff questionnaire featured 21. Items were divided into domains (e.g. Communal Areas, Bathrooms). A six-point anchored Likert scale was employed ranging from 1 “strongly agree” to 6 “strongly disagree”. The total scores were computed by summing the corresponding items (after reversing the single item which was negatively stated (“the ward

feels like a prison’’), with higher scores indicating negative views. Eight items were identical across both questionnaires which enabled direct comparisons of staff and service user views. For each domain, comment spaces were also included to provide additional qualitative data.

Quantitative results

Service user measure

Feasibility and acceptability. All participants found the questionnaire easy to understand and complete, while 11% felt that it was too short and 21% of respondents reported that it was incomplete. However, when service users identified the missing topics, none was strictly related to the physical environment as such (frequency of scheduled activities, length of garden breaks, etc.). Finally, three service users found some of the items to be distressing, and reported that they did not enjoy discussing an environment in which they were held against their will. The Flesch reading ease score was 84.6 (8–9 years old), which suggests that the questionnaire is easy to understand.

Reliability. Two items were omitted from the scale as they had low item-total correlations (<0.3) and the weighted Kappa (K_w) for these items was low (<0.2). For the resulting 17-items scale, Cronbach's alpha was 0.91 (at both time points)

Table 1. Service user and staff demographic data.

(a) Service users	Measure development phase <i>N</i> = 10 (%/SD)	Questionnaire phase <i>N</i> = 53 (%/SD)	Photography phase <i>N</i> = 36 (%/SD)
Gender			
Men	5 (50)	30 (56.6)	17 (47.2)
Age			
Mean	44.2 (11.9)	41.41(10.5)	44.20 (10.7)
Ethnicity			
White	5 (50)	22 (41.5)	17 (47.2)
Black/minority ethnic	5 (50)	31 (58.5)	19 (52.8)
Diagnosis			
Schizophrenia/psychosis	4 (40)	24 (46)	18 (50)
Bipolar disorder	3 (30)	13 (24.5)	11 (30.6)
Depression/anxiety	2 (20)	2 (3.8)	0
Substance misuse	0 (00)	2 (3.8)	2 (5.6)
Dual diagnosis	0 (00)	3 (5.7)	2 (5.6)
Other	0 (00)	5 (9.4)	2 (5.6)
Not disclosed ^a	1 (10)	1 (2.5)	1 (2.8)
Legal status			
Voluntary	0	22 (41.5)	13 (36.1)
Under section	0	27 (51)	20 (55.6)
Not disclosed/unavailable ^a	10 (100)	4 (7.5)	3 (8.3)
(b) Staff	Measure development phase <i>N</i> = 10 (%/SD)	Questionnaire phase <i>N</i> = 61 (%/SD)	
Gender			
Men	5 (50)	30 (49.2)	
Age			
Mean	39.7 (7.8)	35.64 (9.4)	
Ethnicity			
White	2 (20)	25 (41)	
Black/minority ethnic	7 (70)	34 (56.8)	
Other	1 (10)	1 (1.6)	
Not disclosed	0 (00)	1 (1.6)	
Status			
Qualified nurse	10 (100)	51 (83.7)	
Student nurse	0 (00)	7 (11.5)	
Domestic	0 (00)	1 (1.6)	
Registrar	0 (00)	2 (3.2)	

^aTwo individuals did not allow the researchers access to medical notes.

indicating high internal consistency. With respect to the test–retest reliability, K_w was sufficient for all items, varying from 0.3 to 0.8, indicating fair to substantial agreement. For the total scores' stability, Pearson's r was 0.85 ($p < 0.001$) signifying strong, positive correlation between the two assessments. Finally, the ICC was 0.84 ($p < 0.001$) representing strong agreement of the total scores between assessments.

Association of measure total scores with sample's characteristics

In contrast to our hypothesis, service users from a white background had more negative views of the ward design than those from an ethnic minority background ($F = 5.70$, $p = 0.021$) (Table 2). The effect was present even after adjusting for age and gender. Those service users diagnosed with a psychosis spectrum disorder had lower scores, indicating they viewed the ward design more positively than those services users with other diagnoses ($F = 4.01$, $p = 0.025$).

Staff measure

Feasibility and acceptability

All respondents found the questionnaire easy to understand and complete and 96% that the length was appropriate, while 28% felt that the measure did not cover everything. However, suggested missing items were not design related (e.g. understaffing, concerns over pay). The Flesch readability

score was 70.4 (12 years old), which suggests that the questionnaire is easy to understand.

Reliability

The alpha coefficient for the 21 items was high (0.93 and 0.91, for the first and second assessment, respectively) and the item – total correlations were higher than 0.4 in all cases, indicating internal consistency. No problematic items were present. The K_w was sufficient for all items, varying from 0.3 to 0.9, indicating fair to substantial agreement on item level, while similar results with the service users' measures emerged with respect to the total scores (Pearson's $r = 0.85$, $p < 0.001$; ICC = 0.84, $p < 0.001$).

Association of measure total scores with sample's characteristics

Staff participants from a white background were similar to service users in their more negative assessment of ward design ($F = 8.81$, $p = 0.004$). Moreover, following univariate analyses, we found that one ward in particular elicited more negative views of ward design than the others ($F = 5.56$, $p = 0.002$) (Table 2). No other group differences were found.

Comparison of staff and service user views

The mean total score of the eight identical between the two questionnaires did not differ significantly between staff and service users (mean difference = 2.6, $se = 1.5$; $t = -1.791$,

Table 2. Service user and staff characteristics and their associations to ward perceptions.

(a) Service users	<i>N</i>	Mean score (SD)	95% confidence intervals	Partial eta squared	Significance
Gender/ward ^a					
Male	29	51.93 (16.63)	45–60–58.25	0.04	0.183
Female	21	58.47 (17.26)	50.62–66.33		
Ethnicity				0.11	0.021
White	21	61.14 (15.82)	53.94–68.34		
BME	29	50.00 (16.60)	43.69–59.52		
Age				0.22	0.525
<43	24	53.75 (14.90)	47.54–60.05		
43+	22	56.82 (17.53)	49.04–64.59		
Diagnosis				0.15	0.025
Psychosis	23	47.83 (14.75)	41.45–54.21		
Bipolar	12	58.67 (16.20)	48.37–68.96		
Other	15	62.00 (17.89)	52.09–59.52		
Section				0.03	0.238
No section	22	51.09 (16.43)	43.80–58.38		
Section	26	57.00 (17.57)	49.90–59.27		
(b) Staff	<i>N</i>	Mean score (SD)	95% confidence intervals	Partial eta squared	Significance
Gender				0.05	0.081
Male	30	51.80 (16.85)	45.51–58.09		
Female	27	59.66 (16.50)	53.14–66.20		
Ward				0.24	0.002
Ward 1	18	67.28 (15.30)	59.67–74.89		
Ward 2	18	48.83 (14.84)	41.43–56.24		
Ward 3	9	55.11 (15.51)	43.18–67.03		
Ward 4	12	48.25 (15.35)	38.49–58.00		
Ethnicity				0.14	0.004
White	27	61.96 (18.20)	54.76–69.16		
BME	29	49.24 (13.69)	44.03–54.45		
Age				0.01	0.468
<34	22	59.54 (17.79)	51–66–67.44		
34+	19	55.58 (16.683)	47.54–63.62		
Band				0.03	0.557
High	12	54.08 (16.28)	51.19–63.93		
Low	34	57.56 (19.11)	43.35–64.81		

The statistical significance of the negative assessments by ethnicity and ward are marked in bold.

^aGender and ward dimensions identical, as wards were single sex.

df = 112, $p = 0.076$) (Table 3). However, service users were less likely than staff to find communal spaces conducive to socialising ($Z = -3.188$, $p = 0.001$) and also viewed the ward as more prison-like than staff ($Z = -5.121$, $p < 0.001$).

Qualitative results

Questionnaire responses

Thirty-four staff (55%) and 29 service user respondents (55%) filled in the comment boxes. In what follows, we highlight the key themes emerging from the questionnaires in terms of shared and group specific concerns.

Shared concerns

Participants from both groups described their surroundings as ‘bland’ or ‘institutional’, mentioning features such as ‘standard issue’ bedding and ‘washed out’ colours on the walls, which – as one service user put it – contribute to ‘a very uninspiring ‘what needs must’ form of environment.’ Both groups expressed a desire to see more artwork displayed on the ward and service users consistently registered an association between a ‘brightening up’ of the ward and an improved sense of well being.

However, while both groups claimed that art can ‘add’ to an environment by providing a means of emotional expression some participants also pointed out that the presence of artwork may not be enough to improve one’s experience of the ward space.

Hygiene and maintenance

Both wards had communal bathrooms which became the focus of most comments around hygiene: several participants complained about facilities in disrepair, overcrowding, mess and fear of infection. Service users recognised the difficulty of keeping bathrooms and toilets clean, given the ratio of inpatients to bathrooms in each facility – in one ward there was only one functioning bath for 18 residents. Service users reported that the state of the bathrooms made some people reluctant to use them, which then compounded hygiene problems. Staff too reported that the state of the washing facilities generated considerable discomfort for service users.

Additionally, both staff and service users traced some of their problems back to the overall design of the washrooms: in particular, the incorporation of showers and toilets into an integrated wet room, the lack of shelving and of detachable

toilet seats made the rooms particularly uncomfortable to use. Furthermore, service users also suggested that poor design may contribute to a lack of hygiene: for example, some implied that having communal bathrooms in an acute ward makes it difficult to maintain hygiene standards.

While complaints about poor hygiene typically focused on bathrooms, some participants also mentioned the messiness and neglect of the outdoor space. This was particularly evident with the female ward where the garden was shared with a male ward (Table 4a).

Group specific concerns

Service users – control and safety

For service users, lack of control and of autonomy were pervasive concerns, with many participants complaining about their inability to adjust the ward appliances and fixtures such as windows, showers and heating. Lack of access to the TV remote was regularly commented upon as emblematic of service user disempowerment while in the ward.

The automatic locking of rooms was a particular cause for concern as it meant depending on the nurses in order to gain access to bedrooms and, occasionally, bathrooms. At the same time, locks were valued for providing security on the ward with service users feeling particularly vulnerable if bedroom locks were damaged (Table 4b).

Staff: need for activity-specific spaces

Staff regularly commented on the lack of designated spaces for therapeutic or leisure activities. Participants claimed that lack of separate rooms constituted a considerable problem for the day to day running of the ward, as it could interfere with patients’ needs for privacy and confidentiality and therefore with nursing staff’s ability to carry out intensive work with patients. Finally, participants argued that lack of space could seriously constrain patient choice and compromise quality of life on the ward (Table 4c).

Photographic study responses

Seventy photographs were taken. Photographs were organised according to areas of the ward represented and their negative or positive valence. The accompanying interviews were submitted to thematic analysis to identify reasons for participants’ choices. The most frequently photographed areas were the shower/toilet facilities (17), the dayroom (14) and the private

Table 3. Analysis of identical items between two measures.

Item	Service user mean rank/median	Service user IQR	Staff mean rank/median	Staff IQR	Z score	p Value
The ward feels open and spacious	59.46/2	2–3	55.80/2	2–3	−0.619	0.536
The ward is clean and well maintained	56.42/2	2–4	58.44/2	2–4	0.342	0.733
The way communal areas are laid out makes it easy for (service users) to socialise with other people	67.42/2	2–4	48.89/2	2–2	−3.188	0.001
There is plenty of daylight on the ward	56.88/2	2–3	58.04/2	2–2	0.196	0.844
Bathrooms and showers are pleasant to use	57.29/4	2–5	57.68/3	2–5	0.064	0.949
(Service user) bedrooms feel homely	55.13/3	2–4.5	59.56/3	2–4.5	0.729	0.466
The garden is well maintained	56.48/3	2–5	58.39/3	2–4	0.314	0.754
The ward feels like a prison	74.11/4	2.5–6	43.07/2	2–3	−5.121	0.000

Items demonstrating significant variance between groups are shown in bold.

Table 4. Staff and service user qualitative data.

(a) Shared concerns**Visual stimulation**

“These things help brighten up your mind or your mood” – AL30.33 (Service User)

“The ward needs brightening up with more colourful schemes to cheer patients up when they feel low” – AL30.16 (Service User)

“Maybe different colours of paint [sic] would make the rooms more individual” – AL3S21 (Staff)

Artwork

“Artwork should be realistic and renaissance, pictures . . . that make you feel good and bring hope”. – N.03 (Service User)

“The artwork looks like an afterthought and does not seem very relevant to the patient experience (although some artwork done by patients is occasionally hung up)” – NS.2 (Staff)

“It helps to have all the pictures on the wall but little sporadic things it’s not really enough” – N.08 (Service User)

Poor hygiene and disrepair

“The toilet facilities are appalling. They are the #1 thing that clients and staff alike are unhappy with. Dirty, dingy and depressing.” – NS.35 (Staff)

“they get clogged and they’re very stuffy . . . it can take just two people to not be clean enough and it’s really smelly” – NS.17 (Staff)

“Sometimes they are pleasant to use, because I have been here a while it depend what patients are on the ward.” – N.02 (Service User)

“No cubicals [sic]. No plug-hole ‘cover’ therefore can’t take baths! Shower and bathroom rooms are disgusting and I can only have a weak, not-enjoyable shower – in flip flops through fear of catching anything in the mornings.” – AL30.25 (Service User)

“The toilets and bathrooms are combined with no partition and nowhere to hang clothes and towels” – AL20.28 (Service User)

“[The garden] is dirty most times and at the moment the grasses are grown” – NS.16 (Staff)

“Because the garden is shared by another group of service users who are male. The rubbish seems to accumulate quite rapidly mainly cigarette packets – sometimes cans etc” – N.38 (Service User)

(b) Group specific concerns – service users

“I can open and close the window but that’s it” – AL30.25

“Everything is centrally controlled no [sic] to be tampered by inexperienced hands” – AL30.29

“[re control of the TV]: it all depends on what the staff would like” – N.07

“I would like the door to shut and open by itself. That means lock on its own. At night I can close it, in day [open] on its own by turn of a lock” – N.12

“Bath/toilets shouldn’t be shut at night” – AL30.30

“The only quiet place is my bedroom and that it is not even locked. There are potentially aggressive and dangerous patients. Staff should be on patrol for safety positioned near living room, the corridor. Feel too exposed and threatened.” N.05

(c) Group specific concerns – staff

“Would be good to have a doctor’s office with a phone and a computer and have a locker” NS.12

“Not enough space available to facilitate day to day activities” AL30S.13

“Lack of space and of rooms (relaxing, quiet, visiting, staff room).” – NS.3

“The ward is small with very little space for private 1-1 talks with patients or visitors and patients. There is also no space for a therapy room where groups can be held, so they are held in the dining area or visitors’ room which means there is nowhere for visitors.” – NS.09

“Not enough space for ward activities, making clients irritable if activities are not done.” – AL30S.10

Service user photographic study**(d) Privacy and spaciousness**

. . . peace of mind to me is really important. And so when I’m in here, it means that nobody else can touch me in here, I can lock my door and this is my world and nobody can come in. – P025

I like the furniture in the living room. It’s basically all well set up and it’s all well laid out. Erm, you can watch the TV, you can hang out with people that you know. It’s a very safe area, I feel that it’s a very safe area . . . It’s just a stop gap to help you cope really, from every day life here which seems like a prison. – P05

[The dayroom] has enough furniture, enough space . . . I get enough light into the living area, and I find myself in good mood to talk to anybody – P030

(e) Poor hygiene and disrepair

Most times the floor [in the bathroom] is wet and there’s a strong urine scent. I’m not saying that I wouldn’t smell better if I used it, it’s just that it puts you off, yeah – P034

. . . the sinks get blocked due to . . . the smokers coming here . . . they put their stubs into the sink and that goes in and blocks the sink. The smokers can happily smoke here because they’ve disabled the fire alarm . . . by pulling out the tag to the fire alarm . . . And then you have the soap dispensers which are broken. And some bathrooms have soap but they don’t have a working hand dryer . . . if there is soap to use I tend to clean the toilet rim myself with a soap and some paper before I use the toilet [flushes] – P016

(f) Disruptive design

If you want to switch off the light . . . you’ve got to get up, go straight [outside] the door and come back to bed. There’s no reason why there should not be a switch for switching the light when I want to sleep. P029

It’s terrible. It’s not a shower. See, you have to keep pressing the button all the time. It doesn’t look like a convenient shower it looks like a shower from prison – P005

(g) Symbolic dimensions – spaces standing in for past experiences

[The bedroom] reminds me when I went on holiday. That’s what it was like . . . I like the built in wardrobes. And the chair . . . It reminds me of all the holiday trips that I’ve been on, which I really really enjoyed. – P012

. . . this is where they showered me . . . very time I come here I remember what I’ve been through, the intrusion . . . I suppose the whole place won’t be a good place. – P034

bedrooms (12). Bathroom photographs were overwhelmingly negative (88%), while dayroom and bedroom photographs were mostly positive (85% and 83%, respectively). While there were no significant differences in participants’ preferences for bathroom or day room photographs between genders/wards, men were three times more likely than women to take photographs of their bedrooms.

In the interviews service users spoke of their preference for private bedrooms, spacious facilities and for bright, comfortably furnished dayrooms facilitating social and leisure activities (Table 4d).

Fifty-two percent of the negative photographs focused on lack of maintenance and poor hygiene. The most severe criticism was reserved for the shared wet rooms with

integrated toilet. These washrooms had no shelving and participants went into considerable detail about how some people's activities in these rooms (smoking or leaving towels on the floor) made them unpalatable to others (Table 4e).

Participants were also critical of those design elements (light switches, locks, showers) that required extra effort to operate or disrupted habitual everyday routines (Table 4f).

The symbolic dimension of the physical environment was apparent in several participants' comments (e.g. the lock in the bedroom door connoting "peace of mind", the bare walls of the shower suggesting a prison environment). In some cases, however, this dimension became the sole focus of the photograph: some participants photographed parts of the ward, pictures or furnishings which held personal meanings for them. For some of these participants, certain areas of the ward had become "tainted" by a negative event that had taken place there (Table 4g).

Discussion

Both service user and staff measures had high internal consistency after the removal of two underperforming items on the service user measure. They both also had good test-retest reliability with strong agreement between assessments, indicating they have good psychometric properties.

We did not find evidence to support our hypotheses concerning differences in perceptions of ward design. Within the service user sample, there were no observable differences by gender, age or legal status. The positive ratings among BME service users were unexpected. Studies in the UK suggest that BME service users experience reduced service satisfaction and tend to be more negative about in-patient experiences (The Sainsbury Centre for Mental Health, 2002). These studies, however, concentrate on the human aspects of the treatment environment (e.g. relations with staff, continuity of care and violence in the ward) and do not explicitly address the physical environment. Since BME staff in our study also showed more positive ratings than white staff, this finding is not restricted to the service user population. BME respondents' more positive perceptions may result from lower expectations about hospital design, reflecting the deprivation that such respondents may experience (The Rowntree Foundation, 2011). Our finding that participants with a psychosis spectrum diagnosis tended to be more positive towards ward design may also relate to the greater degree of social exclusion experienced by individuals who live with this diagnosis (Killaspy et al., 2014). Further studies with larger samples are needed in this area in order to better explore the relationship between ethnicity, social exclusion and perceptions of the built environment.

Furthermore, the divergences between staff and service users on overall impressions of the ward environment (whether the ward is prison-like or conducive to socialising) may relate to the different relationships the two groups have to the ward space. Service users – even those admitted on a voluntary basis – are restricted by the locked doors of the ward, while nurses not only hold the keys, but also go home at the end of their shift. Therefore, service users may be more likely to view the ward as a prison-like environment, regardless of ward design.

Our group-specific concerns emerging in the qualitative findings shed further light on these divergences: we found that service users emphasised the need for control and safety on the ward, while staff required more activity-specific spaces. Such preferences are supported by existing studies on ward perceptions (Shattell et al., 2008; Ulrich, 1991; Winkel & Holahan, 1985). Staff prioritisation of separate rooms may relate to their perspective on the ward as a place of work, where more rooms mean a better chance to carry out daily duties undisturbed. Service users, whose movements are restricted by locked doors, are more likely to experience the ward as a highly regulated space and may consequently prioritise a need for access to all areas and for free movement across the ward.

Data from the photographic study echo the qualitative findings for service users. Additionally, the photographic study produced a more nuanced picture, because it allowed service users to access effects of design that may not easily lend themselves to verbalisation (Dellinger, 2010). Moving around the ward armed with a camera enabled an embodied response to the environment: rather than simply reporting their views on the ward environment, participants could demonstrate what it feels like to interact with and experience that environment. Notably, the location of certain fixtures and fittings (no separation between shower and toilet facilities; inaccessible light switches) was shown to disrupt users' habitual routines and generate discomfort, thereby compromising their sense of well-being.

Furthermore, photography captured the symbolic impact of the ward environment for service users by triggering memories and personal associations for some participants. While such impact cannot easily be predicted or controlled, it is worth taking this dimension into account as a possible mediator of the relationship between physical environment and treatment outcomes.

Finally, we noted that participants consistently introduced what appeared to be non-design related issues in their qualitative comments and the acceptability assessment of the measure (lack of access to the garden, lack of activities). Rather than concluding that respondents had misunderstood the purpose of the measure, we would suggest that service users and staff alike may experience the ward environment holistically, so that the physical, social/relational and symbolic aspects of that environment are indissociable. Research combining in-depth interviews with photographic data as well as ethnographic methods may enable better access to that experience, thereby supplementing the measure introduced in this paper.

Conclusion

This study demonstrated that a measure of staff and service user perceptions of ward design, produced through a participatory methodology, provides an important resource in the evaluation of in-patient psychiatric facilities. Moreover, we have shown that novel visual methods may provide an important supplement to quantitative assessment by allowing us to access the more embodied ways in which design impacts on those who live and work on psychiatric wards. Use of *Design in Mind* concurrently with other user generated tools

[e.g. *VOICE – service user views on inpatient care; VOTE – views of the therapeutic environment; VOCALISE* (Evans et al., 2012; Laker et al., 2012)] may enable an in-depth assessment of the experience of in-patient care for service users and frontline staff alike.

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