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Comparison of Outpatient Satisfaction Measures Across Hospitals Built to a Thai Standard Design

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Abstract

This research reports on the effect of the 'built environment' on levels of comfort experienced by users of a hospital outpatient department (OPD). The focus is on Thai community hospitals that are built to a standard design. It was expected that a standard design would result in similar profiles of user satisfaction. The method classified environmental features as ambient, architectural, interior design, and outdoor. Each of these macro factors were divided into their contributing sub-factors. A survey was conducted to assess OPD users' perceptions of the environment. Responses were analysed using the Analytic Hierarchy Process. Results indicated no common pattern at the macro level. However, when contributing factors are redefined as 'distress' and 'destress' factors, a pattern of user perceptions across the hospitals is evident. Applying Herzberg's model of job satisfaction to the observed results a clear pattern emerges. The results of this research provide practical advice, from a user perspective, for those charged with design of the physical structure of outpatient settings.

Keywords: outpatient, environment, stress, comfort, design

1. Introduction

Community Hospitals were a Thai government initiative developed some thirty years ago. The aim was to establish a hospital that was available to the local community. As such, each provincial sub-district throughout Thailand has a community hospital. The total number of hospitals is 720, with a bed count ranging from 10 to 120 depending on geographic area (Ministry of Public Health, 2018). The community hospital provides basic services: an emergency room, a public outpatient clinic, delivery room, basic operating room for minor surgical procedures, and a small number of in-patient rooms. They are not the equivalent of the larger hospitals in the major cities of the country

As with most government construction, all the community hospitals were built according to a standard design approved by the government (See Fig. 1). Over the years, minor modifications and extensions have been made to the buildings (e.g. re-location of reception to a central area rather than at one end of the waiting area, construction of additional toilets). These were due primarily to increased patronage resulting from general population increase. The modifications focused primarily on operational needs. Little consideration was given to aesthetics or the ease and comfort of hospital users. In terms of the "outpatient experience" the community hospitals have been found wanting. Pongyen & Waroonkun (2015) found that community hospital users reported negative feelings about their hospital experience. The authors suggest that the reason for this is that the basic construction and extensions to the hospital fail to consider functional layout, aesthetics, and user comfort: factors that are sources of patient satisfaction.

2. Literature Review

In our contemporary period of hospital design/construction more attention has been given to the effect of the hospital environment on the well-being of its users (Lacanna, 2014; Gesler et al., 2004). In his early work Ulrich (1991) proposed a model of patient care that he termed the "Theory of Supportive Design". He argued that stress reduction is a critical factor in promoting positive therapeutic outcomes. He notes that 'healthcare facilities should not …. contain features that are in themselves stressors' and further 'should be designed to facilitate stress reducing influences". (Ulrich, 1991, p. 99)

Ulrich (1991) distinguished between environmental features as "positive distractions" and "negative

distractions". The former being environmental features that are stress reducing, while the latter are those features that contribute to negative emotions; anxiety, fear, uncertainty. Thus reduction in stress can be achieved by the addition of positive distractions or by a reduction in the effects of negative stimuli (Dijkstra, 2009). By way of example: nature, artwork, music can be considered positive stimuli that will cause a reduction in stress levels. Noise, temperature extremes, poor ventilation can be considered negative stimuli whose deleterious effect should be minimized.

Ulrich (2006) and others (Ulrich et al., 2008; Becker & Parsons, 2007; Malkin, 2008) have called for research that matches environmental design features with specific, measurable therapeutic outcomes. Such research would provide a body of knowledge that will become the corpus of "Evidence Based Design" (EBD). Notwithstanding the merits of this concept, much of the research on EBD has been conducted using in-patient respondents reacting to the physical environment features present in a ward or hospital room. In these circumstances, it is relatively easy to obtain a measure of medical/therapeutic/well-being outcomes - even stress levels, associated with the presence, or absence, of specific design features (for extensive reviews of the material regarding this issue see (Dijkstra et al., 2006; Gill & White, 2009; Huisman et al., 2012; Van den, Jaspers Frans, & Wagenaar, 2005). However, objective outcome measures are not easily achieved for respondents in the "outpatient" environment. Research investigating the role of design features in an out-patient department (OPD) can only gauge the effect of design features by asking the patients to report their feelings. There is no simple objective measure of the physiological and/or behavioral response of participants. Most of the research regarding OPD users has utilized a measure of user satisfaction (opinion) regarding environmental features rather than some objective measure of the environment's influence. (Tsai et al., 2007; Andrade et al., 2012; Zhao & Mourshed, 2017)

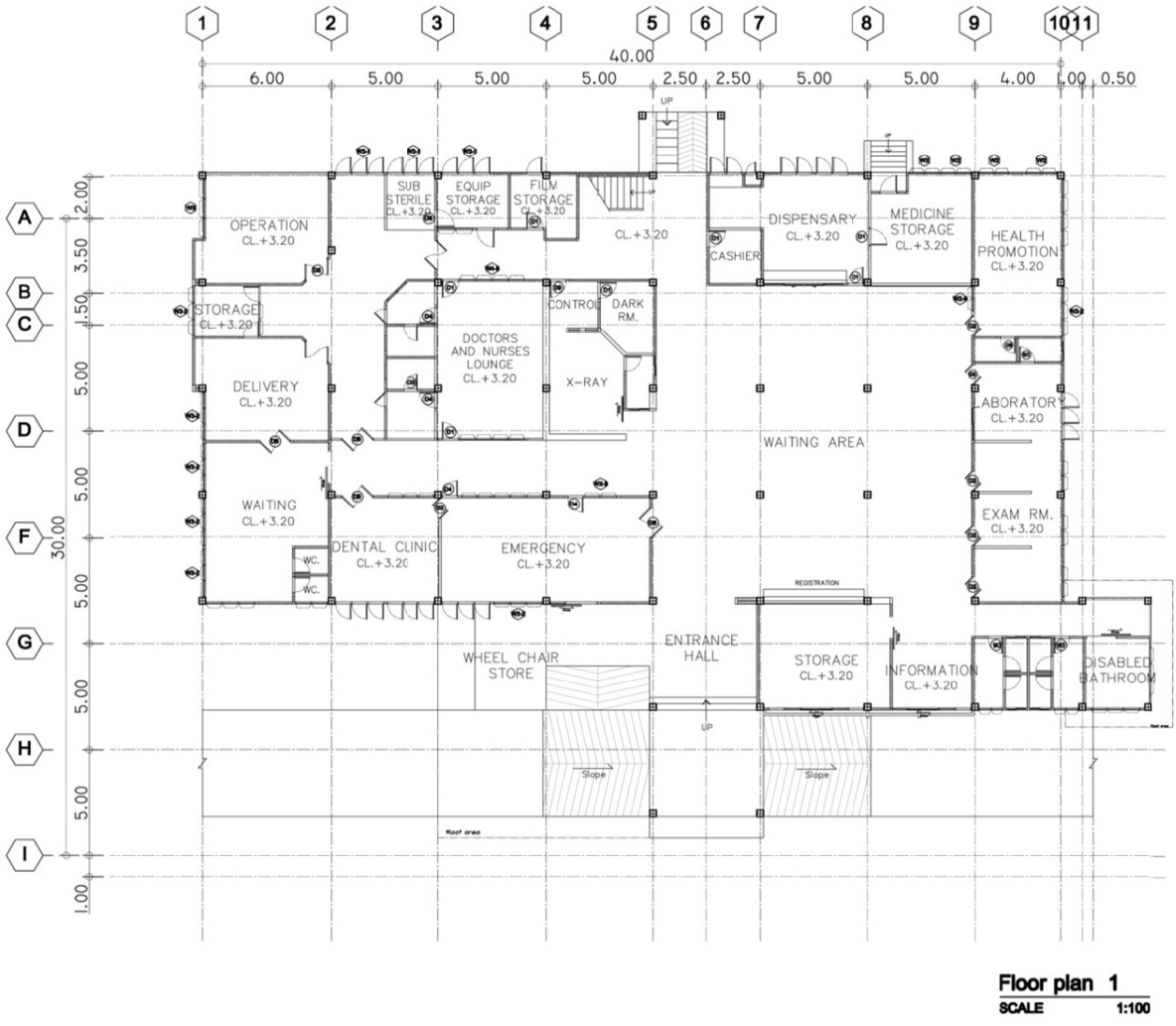

Figure 1. Standard Community Hospital Construction Plan from Ministry of Public Health, Thailand

Harris et al. (2002) investigated the relevance of environmental satisfaction to overall satisfaction with the hospital experience. Their categories for design features contributing to "physical comfort" included 'ambient features', 'architectural features', and 'interior design features'. A similar model was adopted by Dijkstra et al. (2006) when discussing their classification of the physical healthcare environment. Ambient features include temperature, lighting, noise level, air quality and smells. Architectural features are those factors that relate to the actual physical structure of the environment: entrance, layout, windows, floor materials, toilet elements. Interior design features are those factors in the environment that can enhance a sense of ease and comfort for the hospital user. Interior design features include: art works, plants (nature), television, color scheme, furniture, and signage. This model was also used by Pongyen & Waroonkun (2015) and Waroonkun (2018), with the addition of a further category: 'outdoor environment features'. Outdoor environment features relate to those services and activities that are not part of the actual waiting area but are considered to be part of the OPD users experience and to have an impact on users' level of anxiety/comfort. Included in this category are physical surroundings and view, rest areas, building extensions, additional services (cafe, convenience store,) and parking. Parking was also observed by Harris et al. (2002) as an issue often mentioned by their respondents.

As a measure of design influences using these criteria, the author has adopted a hierarchical rubric of design features and their influence on user satisfaction (Fig 2). The concept model shows that overall satisfaction is influenced by the four macro factors (ambient, architecture, interior design, and outdoor). The features contributing to the macro factors are considered secondary factors.

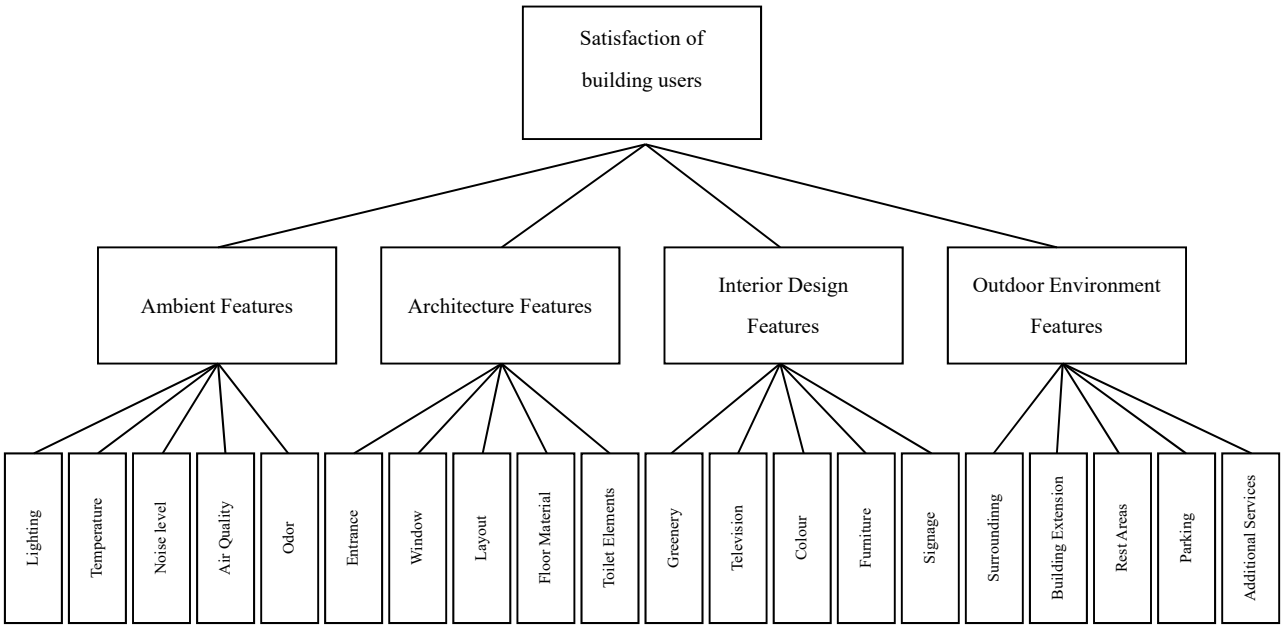

Figure 2. The hierarchy structure of environmental factors in a hospital building (Harris et al., 2002; Waroonkun, 2018)

Considering the role of 'stress' in a 'supportive environment', it is important that the hospital environment should not exacerbate any stress experienced by an outpatient user but rather be designed to reduce such stress. Community hospital users' satisfaction with features of the physical environment will be influenced by the extent to which those features can mitigate their feelings of stress. In this present study, the role of positive and negative sources of stress are described as 'distress' and 'destress' variables. Drawing on the work of Seyle (1974) and Seyle (1975), a 'distress' variable is any element of the environment that has the potential to enhance current levels of stress, anxiety, discomfort. In turn, a 'destress' variable is any element of the environment that has the potential to help reduce current levels of stress, anxiety, and discomfort. The secondary factors (Fig. 2) can now be classified as distress or destress depending on the conditions that underlie their effect. In terms of the classification of environmental factors as 'distress' and 'destress' the hierarchical features may be categorized as shown in Table 1 and 2 respectively. Accompanying each feature are those conditions that contribute to its 'valence'.

Table 1. Distress variables and the conditions under which they occur

Environmental feature	Condition
Temperature	Extremes
Layout	Confusing, difficult to navigate
Air quality	Limited flow, not fresh
Additional services	Availability of snack/beverage
Noise level	Extreme
Signage	Absent, confusing, lost in clutter
Odours	Hospital smells, outside vehicle exhaust, toilets
Parking	Availability, location
Toilets	Availability, cleanliness, handicap/elderly
Furniture	Availability, quality, adaptability

Table 2. Destress variables and conditions under which they occur

Environmental feature	Condition
Lighting	Sufficient lumens, mood enhancing
Entrance	Easy to find, 'inviting'
Greenery	Plants, artwork – nature
Rest area	Outside of building, relaxing, seating
Windows	Natural light, view
Floor material	Non slip, clean
Surroundings	Hospital real estate, gardens, inviting
Color	Pastel shades, clean, presentable
Building extensions	Structural additions to OPD space
Television	Available, entertaining

This present study seeks to determine the perceptions of users of an OPD as a measure of their satisfaction with various features of the community hospital environment. We adopt a somewhat wider view of the outpatient experience to include 'arrival' (parking, entry), 'wayfinding' (signage, layout) and finally 'waiting' (out-patient waiting area). A similar view was also taken by the IUSS as the basis for key signage directional points for users of the OPD as part of an overall hospital plan (Department Health, Republic of South Africa. 2018, p.22). Each of these steps in the outpatient journey can be subject to stress altering effects resulting from the design of the healthcare facility, which in turn can alter a user's overall perception of the OPD experience.

The question arises: "Given the standard design for Thai community hospitals, would the users of each hospital reflect a similar satisfaction profile?" Answers to this question will provide valuable input for those charged with refurbishment of existing hospitals or the design of new community hospitals. Using a subjective measure of OPD user's opinions about design features, this study attempts to establish if there are commonalities in satisfaction levels across the standard designed hospitals. Or alternatively, determine if there are variations in the satisfaction levels across the hospitals and what is it about the design elements that form the basis of any differences. The results of this research will provide practical advice, from a user perspective, for those charged with design of the physical structure of outpatient settings.

3. Method

Three community hospitals were chosen (convenience) for the study. The hospitals are located in three different sub-districts in Thailand. Each hospital provides services to over 200 patients per day [Hospital Records]. The hospitals in the study are located at Saraphi, Mae Wang, and Doi Saket (Fig 3). All three hospitals are in Chiang Mai province in Thailand. Saraphi is a quasi-urban area, whereas, Doi Saket and Mae Wang would be considered rural.

The participants in this study were patients/family/friends who were utilizing the services of an outpatient department in one of the Thai community hospitals. The researchers were post-graduate students from a University Department of Architectural Studies. When approaching participants, the researchers paid the traditional Thai gesture of respect ('wai') to the person and introduced themselves and explained they were University students doing a survey about the hospital. In Thai society, this approach would minimize any

concerns the respondents may have about involvement in the study. In fact, this respectful approach may predispose the respondents to freely discuss their views in comfort. The interviews were conducted at each of the hospitals on the same day of the week and at the same time slot over a period of three weeks. It is notable that the interviews took place during the Thai 'hot season' when daily temperatures average 36^0 C (Thailand weather information, Retrieved June 20, 2018).

Figure 3. The waiting area of each hospital, Doi Saket (above left), Mae Wang (above right) and Saraphi (below)

The questionnaire (written in Thai language) required participants to make pair-wise comparisons of the four main factors (ambient, architecture, interior design, and outdoor) that contribute to a sense of satisfaction with the hospital outpatient situation. In addition, respondents rated the relative importance of each of the secondary factors in the hierarchy (See Fig 2). Respondents were enjoined in an unstructured interview with the researcher. Each participant was given the opportunity to read a verbal description of the criteria to be assessed. The researcher then showed the pairwise comparison of the environment features under consideration. The respondent was asked to comment on which of the alternatives was more important to their feelings of satisfaction with their outpatient experience. The strength of their feelings was measured using a nine-point scale that indicated their choice of one alternative over the other. (See Table 3). This involved 46 individual assessments in total. The researchers also noted any comment the respondent proffered at the time. Each interview took about thirty to forty-five minutes. Data was successfully collected from twenty participants at each hospital.

Approval for the survey was granted by the respective hospital administrators. Subjects were asked if they were interested in partaking in the exercise after they were given a brief description. In all three venues there was full compliance. Of note, the strategy of having the respondent working 'with' the researcher made the respondents more comfortable. This may not be the case in western culture where 'privacy' is such a critical issue.

Table 3. The measurement sample of a nine-point scale

Factor	Rating of user's satisfaction between lighting and sound level inside the building																	Factor
	Level of concern								Equal		Level of concern							
Lighting	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Sound

Data provided by the survey instrument was analysed using the Analytic Hierarchy Process (AHP) (Saaty, 1980; Saaty, 1990). The AHP is particularly useful when assessing qualitative measures (user opinions) involved in multi-attribute decision making. A hierarchical structure of attributes is established based on an objective, criteria, and sub-criteria (Fig 2.). Pair-wise comparison of criteria and sub-criteria are conducted using a scaling ratio (Table 3.). The present study uses a nine point scale where a score of 1 means both elements are of equal importance, through increasing values to 9, which indicates one element is of extreme importance compared to the other in the pair. The data is then analysed to calculate weights for each criteria and sub-criteria in terms of their contribution to their immediate higher order level. The weightings are then used to prioritize the criteria

(Yang et al., 2007; Lee, J., & Lee, H. 2015). The AHP method has also been used to prioritize information contributing to a knowledge management system for EBD in healthcare (Durmisevic & Ciftcioglu, 2010).

4. Results

Using the hierarchical structure established by Waroonkun (2018) (see fig. 2), pair-wise comparisons were established and measured using the 9-point rating scale (Table 3). As required for use of the AHP method, the respondents represented a small group who had real experience of the outpatient setting. The matrix calculation of the environmental factors in community hospitals and significant ratios for each hospital are shown in Table 4. The rank ordering is based on the relative weighting of the factors in contributing to the higher order factor as determined by the AHP analysis. The Consistency Ratio (CR) is also reported in Table 5. For a sample of twenty respondents the CR values should be less than 10% (0.1) when comparing secondary factors, and less than 9% (0.09) when comparing the four main factors. The CR data indicates that all factors have a CR less than 0.1, therefore, there is a satisfactory level of consistency in the pair-wise comparison matrix (Saaty, 1980).

Table 4. Overall Weights and Rank of the Factors Effecting User Satisfaction comparing three hospitals

	Hospital	Doi Saket Hospital				Saraphi Hospital				Mae Wang Hospital			
Level 1 Variable	Level 2 Variable	Eigen.	Eigen	Weight	Rank	Eigen	Eigen	Weight	Rank	Eigen	Eigen	Weight	Rank
Ambient	Lighting	0.310	0.193	0.060	5	0.343	0.179	0.061	4	0.305	0.134	0.041	12
	Temperature		0.356	0.110	1		0.333	0.114	1		0.326	0.099	3
	Sound Volume		0.153	0.047	10		0.145	0.05	10		0.199	0.061	6
	Air Quality		0.181	0.056	7		0.187	0.064	3		0.204	0.062	5
	Odor		0.118	0.037	12		0.156	0.054	8		0.047	0.014	20
Architectural	Entrance	0.275	0.196	0.054	8	0.26	0.184	0.048	11	0.191	0.128	0.024	16
	Window		0.117	0.032	15		0.139	0.036	14		0.129	0.025	15
	Layout		0.332	0.091	2		0.207	0.054	9		0.341	0.065	4
	Floor Material		0.083	0.023	19		0.144	0.037	12		0.170	0.032	14
	Toilet's Element		0.272	0.075	4		0.326	0.085	2		0.233	0.045	9
Interior Design	Nature	0.195	0.181	0.035	13	0.224	0.280	0.036	13	0.177	0.245	0.043	10
	Television		0.096	0.019	20		0.093	0.021	20		0.091	0.016	19
	Color		0.163	0.032	16		0.121	0.027	18		0.121	0.021	18
	Furniture		0.306	0.060	6		0.259	0.058	6		0.301	0.053	7
	Signage		0.225	0.044	11		0.247	0.055	7		0.242	0.043	11
Outdoor Environment	View & Surrounding	0.220	0.135	0.030	17	0.173	0.164	0.028	17	0.328	0.117	0.038	13
	Extensions		0.110	0.024	18		0.134	0.023	19		0.074	0.024	17
	Resting Area		0.153	0.034	14		0.178	0.031	15		0.144	0.047	8
	Parking		0.369	0.081	3		0.341	0.059	5		0.312	0.102	2
	Special Service		0.233	0.051	9		0.182	0.031	16		0.351	0.112	1

Table 5. The Consistency Ratio (CR) of the environmental factors in community hospitals

Environmental factors	Doi Saket Hospital	Saraphi Hospital	Mae Wang Hospital
CR Main factor	0.026	0.038	0.019
CR Ambient features	0.035	0.038	0.047
CR Architectural features	0.024	0.045	0.036
CR Interior Design features	0.039	0.050	0.050
CR Outdoor Environment features	0.031	0.038	0.033

Using the concept of ‘distress’ variable and ‘destress’ variable, as defined in the introduction, the rankings shown in Table 4 may be re-organized to show the type of stressor involved (Table 6).

Table 6. Relative rankings of secondary features for each hospital showing type of stressor

Key: Distress factor Destress factor

Feature	Saraphi	Feature	Mae Wang	Feature	Doi Saket
temperature	1	additional services*	1	temperature	1
toilet elements	2	parking	2	layout	2
air quality	3	temperature	3	parking	3
lighting*	4	layout	4	toilet element	4
parking	5	air quality	5	lighting*	5
furniture	6	noise level	6	furniture	6
signage	7	furniture	7	air quality	7
odour	8	rest area*	8	entrance*	8
layout	9	toilet element	9	additional services*	9
noise level	10	greenery*	10	noise level	10
entrance	11	signage	11	signage	11
floor material	12	lighting*	12	odour	12
greenery	13	surroundings	13	greenery	13
window	14	floor material	14	rest area	14
rest area	15	window	15	window	15
additional services*	16	entrance	16	colour	16
surroundings	17	building extensions	17	surroundings	17
colour	18	colour	18	building extensions	18
building extensions	19	television	19	floor material	19
television	20	odour	20	television	20

5. Discussion

The current study aims to determine if physical design features, and their influence on outpatient comfort, are generalized across different hospitals. Given that all hospitals are built to standard design it is expected that there would be some commonality of presence and influence.

The relative importance attached to physical design features by users of the OPD at each hospital was assessed using the Analytic Hierarchy Process (AHP). Basically, the AHP analysis result is a measure of hospital users' perception of the relative importance of each of the factors contributing to their outpatient experience. This is not to say that factors low on the list are not important, but rather that they are not as important as those factors higher on the list.

Results show that 'ambient features' was the main consideration for users at Doi Saket hospital followed by 'architectural features', 'outdoor environment' and 'indoor design features'. For Saraphi hospital, 'ambient features' was also most important, followed by 'architectural features', 'interior design' and 'outdoor environment'. In contrast, 'outdoor environment' was most important for Mae Wang hospital. This was followed closely by 'ambient features', 'architectural features', and 'interior design'. These results suggest there is not an exact correspondence between hospitals in terms of user perceptions of design features. Each hospital has its own macro factor profile. It is possible that minor changes each hospital has made to its physical environment have had subsequent influence on user perceptions. These minor changes relate to changes at the sub-criteria level of the hierarchy.

Redefining these sub-criteria as types of 'stressor' (Tables 1 and 2) introduces a new perspective in terms of the relative importance of secondary factor contributions. For all three hospitals, distress factors rank high when measuring influence on comfort levels. Those factors that have been classified as destress are lower on the hierarchy of importance (see Table 6). However, there are anomalies that bear further discussion.

"Lighting" has been described by the author in terms of adequate lumens. Where this is the case lighting can be manipulated as a comforting factor ("mood lighting"). However, where lighting is insufficient it becomes a distressing situation. At Saraphi and Doi Saket Hospital, lighting share a high level of importance as a distress factor. Patients reported that the lighting in the OPD was poor; there were not enough lights; not enough natural light. This problem has resulted from a stop-gap measure used by both hospitals. They have installed light/heat reduction film on the external windows to reduce the temperature and glare. However, this has markedly reduced

the availability of natural light in the waiting area. At Mae Wang hospital the site location of the hospital has minimized the problem of glare. The hospital has not used film on the windows, thereby ensuring ample natural light. Hence 'lighting' has a lower ranking

'Additional services' includes the availability of refreshments (snack, drinks) while waiting (especially if involved in long waits). At Saraphi, this factor is not an issue as there is an outside coffee shop and food is available at street stalls in front of the hospital. At Doi Saket, there is a stall in the grounds of the hospital that caters for food and drink (but only if it is not raining and it does not open regularly). At Mae Wang there is nothing available. If a patient or family member requires a coffee etc. Then it is a motorcycle ride into the village to purchase same. Hence, its top position on the hierarchy.

The lowest ranking given to 'odors' by users at Mae Wang is no surprise. The hospital is located away from the main road in a forest environment. The parking lot is some distance from the hospital itself – hence no exhaust fumes. Responding to the issue of toilet smells, the hospital administration had an external toilet block built. Hence no odors!

Other areas where destress variables have moved up in the hierarchy include 'rest area' and 'greenery' in Mae Wang Hospital. The comments regarding rest area (outdoors) relate to the provision of more seating for family when the internal waiting area is crowded. This factor takes on more of a distress tone because it fails to provide extra seating. The greenery factor was a general comment about how plants in the waiting area make the hospital environment more pleasant (destress). At Doi Saket respondents rated 'entrance' negative and higher because access to the waiting area was made difficult by the storage of wheelchairs and gurneys.

To address the initial research question: do OPD users in standard designed hospitals share a common profile of factors effecting satisfaction. The answer at the macro level (ambient, architecture, interior design, outdoor) is in the negative. But deeper investigation indicates there is a common theme. Across each of the hospitals in the study, those factors that add to a user's level of discomfort (distress factors) rank high on level of importance. Those that reduce the discomfort level (destress factors) are ranked relatively lower. Overall it appears that distress features are more prominent in the minds of OPD users. However, it can be argued that position of a factor in the hierarchy of importance is mobile (and re-definable). As the influence of distress factors are reduced, they are ranked lower (see Mae Wang 'odour', Saraphi 'additional services'). Conversely destress factors can move up the ranking scales as they become more relevant.

Ulrich (1991) suggested that a healing environment results when the physical environment factors do not cause negative feelings but encourage positive outlook. He further argues that in terms of user satisfaction, any factor that has a positive effect would not outweigh factors that have a negative impact. Dijkstra [6] similarly argues that a healing environment will prevail by reducing the effects of negative factors and by adding positive stimuli to the environment.

The author concurs with Andrade et al. (2016) that Herzberg's motivation hygiene theory (Herzberg, Mausner, & Snyderman, 1959) can provide a conceptual model for the effect of environmental factors on satisfaction.

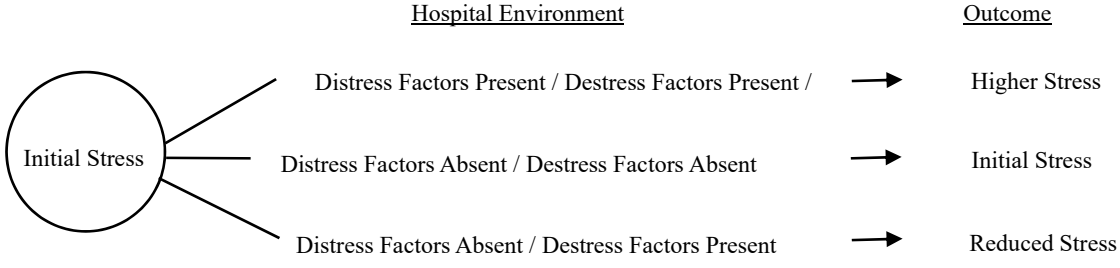

Figure 4. Effect of distress/destress variable interactivity on stress levels

Herzberg et al. (1959) concluded that satisfaction in the workplace depends on 'hygiene factors' and 'motivators'. Hygiene factors are those elements of the workplace that relate to comfort and safety, and motivators are those features that can enhance satisfaction. Simply put: increased satisfaction results when the hygiene factors are present and motivators are active. On the other hand, dissatisfaction occurs in the absence of hygiene factors – with or without the presence of motivators.

Applying the results of this study, the level of comfort expressed by users of the OPD may be determined by the presence or absence of distress/destress environmental factors (Fig 4). In an OPD environment where the distress

factors are present (hygiene factors absent) patients will experience further anxiety/irritation, irrespective of the presence of destress factors. Whereas, if the distress factors are neutralized (now, hygiene factors present) and destress factors are present then patients will experience a calming effect (reduction of stress). Thus, if all distress variables are at an 'acceptable' level i.e. they are not contributing to the inherent anxiety of a hospital visit, then destress variables will have a positive influence.

By way of illustration, no one goes to hospital for fun. When people arrive at the hospital they are experiencing a raised level of anxiety, uncertainty, stress. Suppose when a patient/family arrive at the hospital, they cannot find parking, they enter a waiting area that is uncomfortably hot, there are no seats available (high level of distress factors). Here the presence of greenery or television may do little to reduce the overall level of discomfort. Alternatively, if the negative physical environment factors (distress factors) are catered to (e.g. parking available, ambient temperature at pleasant level, comfortable seating available) then the initial stress levels may be mitigated by the presence of destress factors.

Research has found other variables such as gender, age, visit frequency, wait time, can effect a respondent's feelings about environment satisfaction (Zhao & Mourshed, 2017; Tsai et al., 2007; Bleustein et al., 2014). However, the author contends that although these variables may influence the strength of any positive or negative feelings reported, they do not determine the actual absence or presence of a particular distress or destress factor.

6. Conclusion

The results of this study indicate there are commonalities between Thai community hospitals in terms of the presence and role of distress and destress factors. Where there is a high level of distress factors acting on the OPD user, the role of any destress factor is minimized. These results have implications for those charged with the design of healthcare spaces. Design decisions should aim to minimize the effect of distress factors. The observations reported make an informative contribution to the understanding of user satisfaction, however, any final design considerations, at a minimum, must cater to the full biographic of OPD users. From a design practitioner's point of view, the ultimate aim is to provide a hospital environment that reduces patient (and family) anxiety through the reduction of distressing features in the physical environment. A visit to the outpatient department of the hospital, although probably never enjoyable, should be made as pleasant as practicable. A view that has not been lost on healthcare industry practitioners (DiNardo, A. 2014; Gopal, S. 2016). This study has shown that design considerations for an OPD must accommodate a basic underlying user need: reduction of stress. The results of this study related to a Thai cultural context. In future studies, consideration should also be given to the role of cultural and social environmental factors on the operation of any perceived stressors.

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