Australasian Medical Journal AMJ 2010, 3, 9, 598-603

Public Health Care Centre Design and Stress in Female Patients

Patricia Ortega-Andeane

Cesareo Estrada-Rodriguez

School of Psychology, National Autonomous University of Mexico

RESEARCH

Please cite this paper as: Ortega-Andeane, P., & Estrada-Rodriguez, C. (2010). Public Health Care Centre Design and Stress in Female Patients. AMJ 2010, 3, 9, 598-603.
Doi 10.4066/AMJ.2010.441

Corresponding Author:
Patricia Ortega-Andeane
UNAM, Facultad de Psicología, Edif. D, Cub.2, Av. Universidad 3004. Col. Copilco-Universidad. Del. Coyoacan, CP. 04360. México, D.F.
andeane@unam.mx

Abstract

Background
Based on the results of prior studies, the purpose of the present investigation was to identify relationships between environmental and physical variables and variables of perception of institutional image as generators of stress in female patients waiting for doctor appointments in waiting rooms in a public hospital.

Method
Three waiting rooms with different design features and a sample of 253 women were evaluated: the physical variables measured were: noise, lighting, air speed, environmental humidity, temperature, suspended particles in air, and social density. Valid and reliable psychometric scales were developed to measure each socio-environmental variable: Physical Comfort: Functionality, Physical Comfort: Spatial Perception, Wayfinding, Environmental meaning, Confidence and security in medical service, Human quality of care and Stress.

Results
The results allowed us to develop a valid predictive model based on structural equation statistics that link theoretical relationships among stressors with the empirical data obtained from this study.

Conclusion
We discussed the results in term of the importance of the model, as it offers the possibility of eliminating or controlling sources of stress in future construction or renovation of hospitals, providing information which, incorporated in design guides, offers unparalleled opportunities for prevention, by eliminating potential risks to the health of their users.

Key Words
Environmental stress, design and health, public health care centre, women.

Background

Today there is a growing body of literature which offers empirical results in relation to psycho-environmental characteristics in hospital settings [1, 2, 3, 4, 5, 6, 7, 8, 9, 10] stressing the harmful effects on patient well-being, and in some cases on physiological indicators of health recuperation, increase in blood pressure, and greater consumption of sedatives [11] or disruption of sleep patterns associated with environmental noise [12, 13].

In a recent review, Ulrich, Zimring, Zhu, DuBose, Seo, Chol and Joseph [14] report more than 600 studies related to aspects of the physical environment in hospitals and its impact on stress, security and physical recuperation in patients. Stress, defined as an imbalance between perceived demands and perceived coping resources [15, 16, 17, 18] offers a valuable heuristic to help explain how the physical features of any environment can influence human health and well-being [5, 19, 20, 21]. More specifically, Reizenstein, Grant and Simmons [6] identified stressing factors in hospital environments and grouped them in three categories, which they referred to as: physical comfort, wayfinding, and symbolic meaning.
Figure 1 is a theoretical diagram of relationships between the variables physical comfort, wayfinding, and symbolic meaning as generators of environmental stress as proposed by Reizenstein, Grant and Simmons [6].

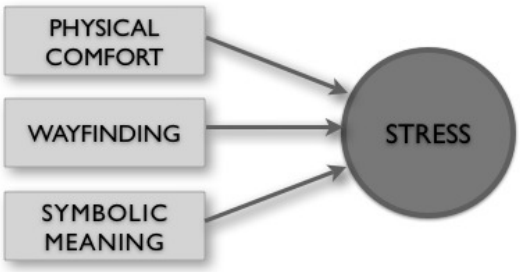

Figure 1 Conceptual model of relationships between variables of physical comfort, wayfinding, and symbolic meaning as generators of environmental stress.

Physical comfort involves factors such as temperature, humidity, noise, lighting, ventilation, density, access to windows, the option to rearrange furniture, and the patient's bodily comfort, among others, which can make the difference between a pleasant and restorative stay and a stressful and completely unpleasant one.

Wayfinding constitute another category of stress producing factors in hospitals. Disorientation in a hospital creates feelings of frustration, anxiety, anger, and incompetence. Wayfinding in some hospitals with labyrinthine floor plans creates serious problems for patients with terminal illnesses, whose faculties are diminished by their physical and emotional condition [22, 23, 24, 25]. Besides wayfinding problems in hospitals are costly and stressful and have particular impacts on outpatients and visitors. Zimring [26] report a study in a major regional 604 bed tertiary-care hospital, the annual cost of the wayfinding system was calculated to be more than $220,000 dollars per year, much of this costs was the hidden costs of direction giving by people other information than information staff, which occupied more than 4,500 staff hours, the equivalent of more than two full time positions.

Symbolic meaning refers to the image a setting transmits to its users. Based on the attributes of a certain environment, people form impressions of the importance, desirability, or acceptability of certain behaviors and of their own role and importance in that environment. A hospital's design can transmit positive or negative messages to its users. The less the patient's needs are taken into account in the hospital setting, the greater his feelings of depersonalization and desperation will be. Lack of control over the environment; lack of companionship; being cut off from the emotional support of one's family; and not receiving the information one needs regarding the location of different facilities in the hospital, the state of one's health, and the procedures to which one is being subjected convey to the patient the message that she is not welcome in the hospital and that she is not important to the hospital, with the consequences we have described on her emotional state and health [27, 28, 29, 6, 30].

Kaminoff and Proshansky's Theory of Environment-Individual Fit [31] explains the extent to which an environment accommodates, facilitates, or supports the needs and relevant behaviors of an individual or of the users that occupy or use it. According to the theory the *maximum fit* in the person's relationship with his environment occurs when the individual or group achieves its goals with a maximum of support and a minimum of interference from the physical environment; on the other hand, with the *minimum fit* people receive a minimum of support and a maximum of interference from their environment. Incompatibility between the properties of the physical environment and the person's needs can produce stress, by creating demands that exceed the person's ability to cope and hinder the pursuit of his objectives in a given setting.

Topf [8] includes the concept of "increasing the person's compatibility with his environment" in line with Karminoff and Proshansky's Theory of Fit between the Person and the Environment [31] and Kaplan's Theory of Compatibility between the Person and her Environment [32], Stokols's Interface between Environment and Behavior [33], and Wicker's Theory of Compatibility between Environment and Individual [34]. All these theories define the person's compatibility with her environment as the result of the physical environment's facilitating the fulfillment of needs and pursuit of goals by its occupants and being kept free of obstacles to their achieving such ends.

Consequently, it is important to reduce adverse environmental condition, like stress, if they are not reduced can prolong or exacerbate illness or represent threats to the process of recuperation in hospitals or healthcare facilities.

In Mexico, a study that evaluated environmental satisfaction among different users of a private general hospital generated specific recommendations regarding ways to improve environmental organization by seeking the maximum compatibility between desirable environmental characteristics and formal proposals for renovating the hospital [35, 36]. As regards public areas, and waiting rooms in particular, 50% of family members expressed unhappiness because the physical design of the space did not let them openly express their emotions and an additional 20% expressed similar unhappiness over the possibility of being seen in such emotional situations. In this regard, and drawing on studies of the role of environmental design of waiting rooms [2, 6], it is important to offer users the chance to engage in different activities without interfering with one another: areas that foster social isolation with layouts that favor group integration, areas for moderate activity with the support of a TV set, and others for more intensive activity such as children playing. Such design features convey a welcoming image of the hospital to visitors and moderate sources of stress that can wear on them.

Reidl, Ortega, and Estrada [37] conducted another study at a specialized healthcare facility seeking to identify the relationship between physico-environmental variables, physiological variables, and socio-environmental factors and their relationship with the evaluation of stress among patients and their companions. The results pointed to the need to consider waiting and admission rooms focal points in planning, organization, and environmental design of healthcare facilities, with special emphasis on public healthcare institutions in Mexico, as they attend to large numbers of users who are obliged to spend long hours

waiting in environments that do not provide them with the minimum necessary amenities.

Based on the results of prior studies and in the conceptual model of Reizenstein, Grant and Simmons [6], the purpose of the present investigation was to identify relationships between environmental and physical variables and variables of perception of institutional image as generators of stress in female patients waiting for doctor appointments in different waiting rooms in a public hospital.

Method

Consenting participants were interviewed using a pre-structured, pre-tested questionnaire. Ethical clearance was obtained from the Institutional Ethical Committee of The Hospital of Mexico

Setting

Three waiting rooms with different design features: waiting room 1 was the hospital's largest waiting area, rectangular in shape, measuring 118.80 square meters, equipped with 79 chairs divided by an aisle, windowless, with artificial lighting and with no ventilation. Waiting room 2, a corridor with 48 chairs aligned on either side, measuring 66.24 square meters, with windows and natural lighting. Waiting room 3, a corridor with 13 chairs arranged facing the consulting rooms, measuring 52.92 square meters, with no windows or ventilation.

Participants

The sample was 200 female patients, selected intentionally from among patients waiting for appointments in waiting rooms who agreed to complete the self-reporting instruments, informing them that their answers would be analyzed confidentially and for research purposes only, by responsible researchers from a reputable university.

Physical variables

Instruments for physical evaluation: the following variables were measured with Brüel Kjäer brand specialized equipment: noise, lighting, air speed, environmental humidity, temperature, and suspended particles in air.

Waiting time. The time subjects had been waiting in the room at the time the survey was applied.

Social density: Counting the number of persons present at the time the survey was applied.

Environmental variables: Measured using the Environmental Assessment Scale, specially developed for this study by the authors. Includes assessment and perception of physical and environmental factors. It consists of 16 affirmative statements.

Institutional Image: Specially developed for this study by the authors. Measured using a scale of 19 affirmative statements with an answer scale from zero to ten, where zero means absence of the characteristic measured and ten total presence thereof for both psychometric instruments. (See table 2 for psychometric results).

Procedure

Self reporting instruments were applied intentionally to patients who were waiting for appointments. There was no screening of the sample, and instead all the patients were asked to cooperate answering the questionnaires and each patient that volunteered was given the survey; subjects were assured that the information they provided would be kept confidential and that participating in the study was voluntary and would not affect their medical care. If the patient agreed, the patient or her companion was asked to sign an informed consent form. In parallel and at 30 minute intervals, readings were taken from equipment measuring noise levels, lighting by zone, suspended particles, air velocity, humidity, and average temperature in each waiting room.

Results

The participants were 200 female patients, with average age of 32 years and age range of 15 to 56. Of the sample, 30% had only elementary education, 34% junior high school, 28% high school, and 5% university degrees; 3% had no formal schooling. The socioeconomic level was mostly low; 73% of the women were homemakers, 17% employees and merchants, 3% students, and only 7% professionals. To obtain validity of construct and reliability of the two self-reporting instruments, factorial analyses were conducted by means of the primary components method with oblimin rotation, and for reliability Cronbach alpha reliability coefficients were obtained. The results from each instrument are presented in Tables 1 and 2 below. Table 3 also shows the correlations between factors for each psychometric instrument.

Table 1. Psychometric properties of the Environmental Assessment Scale

Environmental Assessment Scale					
	Mean	Standard Deviation	Eigen Value	% Variance	Reliability
Confidence and security in medical service	8.06	1.90	6.61	34.81	.89
Stress	4.33	2.65	3.03	15.93	.77
Human quality of care	6.50	2.35	1.18	6.24	.83
Symbolic meaning	3.91	2.59	1.09	5.76	.61

Table 2. Psychometric properties of the Institutional Image Scale

Institutional Image Scale					
	Mean	Standard Deviation	Eigen Value	% Variance	Reliability
Physical Comfort: Functionality	7.21	2.11	6.54	34.40	.86
Physical Comfort: Spatial perception	4.89	2.44	1.77	9.35	.74

Wayfinding	6.84	2.55	1.55	8.14	.80

Table 3. Summary of intercorrelations for factors on the Environmental Assessment Scale and Institutional Image Scale

Environmental Assessment Scale				
	1	2	3	4
1. Confidence and security in medical service	-----	-.16	.65	-.08
2. Stress		----	-.18	.12
3. Human quality of care			----	-.08
4. Symbolic meaning				----
Institutional Image Scale				
	1	2	3	
1. Physical Comfort: Functionality	----	.55	.77	
2. Physical Comfort: Spatial perception		----	.47	
3. Wayfinding			----	

To identify relationships between observed and latent variables, an analysis of structural equations was conducted using EQS 6 for Windows [38]. Figure 2 shows the model of relationships environmental, physical, and institutional image factors and their impact on the creation of perceived stress in patients waiting for appointments in waiting rooms. The model fits the data satisfactorily in accordance with the values Chi Squared= 86.06 and p=0.07, and the indicators of goodness of fit CFI = 0.98 and RMSEA = 0.04.

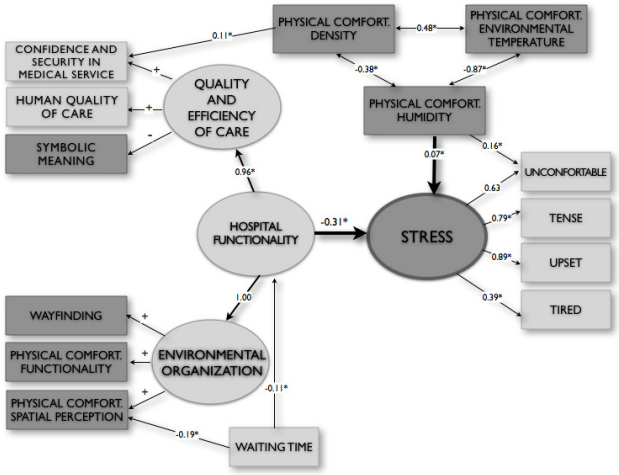

Figure 2. Model of causal relationships of environmental stress in female patients in hospital waiting rooms.

For the results of the analysis of structural modeling, we first present the results of the second order factorial analysis and the confirmative factorial analysis, and then we present the direct and indirect total effects of observed and latent variables that explain the magnitude and direction of stress producing variables in patients waiting for doctor appointments in waiting rooms at a public hospital.

By means of second order factorial analysis we can observe how the factors: Symbolic Meaning, Human Quality of Care, and Confidence and Security in Medical Service are combined in a new factor which we call "Quality and Efficiency of Care". Similarly, the factors: Wayfinding, Physical Comfort: Spatial Perception, and Physical Comfort: Functionality are combined in a new factor which we call "Environmental Organization".

Both factors "Quality and Efficiency of Care" and "Environmental Organization" present heavy factorial loads of (0.96) and (1.00) respectively, and create a new and solid second order factor which we call "Hospital Functionality," in the understanding that we define functionality of a space as the execution of the functions appropriate for and inherent to a hospital area.

Also, confirmative factorial analysis allows us to observe the conformation of the latent variable Stress by means of four items and the factorial loads that contribute to it: uncomfortable (0.63), tense (0.79), upset (0.89), and tired (0.39).

The stress perceived by patients during their stay in the waiting rooms is determined by the latent variable hospital functionality and the observed variables waiting time and humidity. The estimated equation (Stress = -.31 *Hospital Functionality + 0.35 *Waiting Time + .69 *Humidity - .31 error in Hospital Functionality + .95 error in Stress) shows that stress is greater to the extent that worse hospital functionality is perceived, waiting times are longer, and there is higher humidity in waiting rooms.

On the other hand, there are direct relationships of the observed variable humidity with the sensation of discomfort in patients (0.16); the observed variable density or number of persons present in the room with the perception of confidence and security in medical service (0.11); in other words the greater the number of persons in waiting rooms the greater their confidence and security that they will be well attended in that hospital; and the observed variable waiting time has direct negative effects both on the latent variable Hospital Functionality (-0.11) and on the factor[s] Spatial Perception and Waiting Room Outfitting (-0.19). In other words, the longer the waiting time the worse the perception of hospital functioning and the longer the waiting time the worse the patient's assessment of waiting room size and outfitting.

Discussion

The physical design of hospitals, and in particular of waiting rooms, and organizational systems at public hospitals in Mexico produce different, foreign, and often threatening environments for patients. As a result of patients' vulnerability due to their physical condition, which lowers their resistance to absorb the impact of their physical and social environment, on the one hand, and from the institutional standpoint the excessive demand for attention in public hospitals, on the other, the quality of service leaves much to be desired.

This situation is reflected in the model and has been examined by Donabedian [41, 42], who emphasizes the importance of a system's human components in achieving total quality in healthcare systems, and is similarly emphasized by Frenk [43], who underscores the importance of considering objective indicators focused on raising the quality of care, given that in Mexico the adverse impact of

excessive waiting times prior to medical consultation cannot be underestimated.

This situation is reflected in the model of hospital environment and its contribution to producing stress, considering the findings of Kaminoff and Proshansky [30] on the lack of fit between the properties of physical design of rooms, organizational image, and patient needs, which can induce stress; specifically, in our study we can see in the model how hospital functionality, which is made up of two aspects a) assessment of quality and efficiency of care, in other words the evaluative aspects the patient appreciates in relation to the competence of medical care, and its sensitivity in terms of humanitarian treatment of the patient, as well as the positive or negative assessment of her waiting room stay, and b) environmental organization, which considers signage and systems for orientation in emergencies, spatial dimensions, comfort, sufficiency, and arrangement of furniture, [and] accessibility of restrooms, contribute, and both dimensions can cause lack of fit or imbalance with the needs of patients in hospital waiting rooms, by producing stress, as discussed in countless studies reported by Ulrich and Zimring [8] .

We also specifically identify how the environmental conditions prevailing in waiting rooms, produced in part by the customary lack of air conditioning, produces states of discomfort that can cause stress in patients, which coincides with the findings reported by Bell and Greene [44] and the studies of Shumaker and Reizenstein[20].

Conclusion

The results obtained underscore the role of the physical environment in the design of hospital waiting rooms and its level of association with patients' assessment of the quality of care they receive. There is strong evidence that design changes that make the environment more confortable, aesthetically pleasing, and informative relieve stress among waiting patients and increases satisfaction with the quality of care provided [45] . Also, there is evidence that the physical design of the waiting area does indeed buffer the negative impact of the stress known to build in the waiting room [46].
On the other hand, it is pertinent to mention that the model obtained with the research data offers the opportunity to identify sources of stress in the two major dimensions that contribute to a patient's overall satisfaction, the physical environment and the assessment of the quality and efficiency of medical care; these aspects coincide with the results reported by [47] .

This model offers the possibility of eliminating or controlling sources of stress in future construction or renovation of hospitals, providing information which, incorporated in design guides, offers unparalleled opportunities for prevention, by eliminating potential risks to the health of their users.

References

1. Canter, D. & Canter S. Building for therapy. In D. Canter & S. Canter (Eds.), *Designing for therapeutic environments: A review of research* (pp. 1-28). New York: Chichester: Wiley, 1979.
2. Carpman, J. & Grant, M. 1984. *Patient and visitor participation.* Project. Ann Arbor, MI: Unpublished manuscript.
3. Cohen, S., Kessler, R. & Underwood, L. Strategies for measuring stress in studies of psychiatric and physical disorders. In S. Cohen & R. Kessler (Eds.), *Measuring stress. A guide for health and social scientists* (pp. 3-26). Oxford: Oxford University Press, 1997.
4. Evans, G. & Cohen, S. Environmental stressors. In D. Stokols & I. Altman (Eds.), *Handbook of Environmental Psychology. Vol. 1* (pp.571-610). New York: Wiley, 1987.
5. Evans, G. Environmental stress and health. In A. Baum, T. Revenson & J. Singer (Eds.), *Handbook of Health Psychology* (pp.365-385). New Jersey: Earlbaum, 2001.
6. Reizenstein, G., Grant, M. & Simmons, P. *Design that cares*. Chicago: American Hospital Publishing, 1986.
7. Shumaker, S. & Pequegnat, W. Hospital design and the delivery of effective healthcare. In E. H. Zube & G. T. Moore (Eds.), *Advances in environment, behavior and design*. Vol. 2 (pp 161-199). New York: Plenum, 1989.
8. Topf, M. Hospital noise pollution: an environmental stress model to guide research and clinical interventions*. J Adv Nurs.* 2000;31(3):520-528.
9. Ulrich, R. & Zimring, C. *The role of the physical environment in the hospital of the 21 century: A once in a lifetime opportunity.* Concord, CA. The Center for Health Design, 2004.
10. Ulrich, R., Zimring, C., Quan, X. & Joseph, A. The environment's impact on stress. In Marberry (Ed.), *Improving Healthcare with Better Building Design*. (pp. 37-61). Chicago: Health Administration Press, 2006.
11. Ulrich, R. View from the window may influence recovery from surgery. *Science.* 1984;224:420-421.
12. Blake, B. A study of noise and its relationship to patient discomfort in the recovery room. *Nur Res*. 1968;17(3):247-250.
13. Topf, M. Effects of personal control over hospital noise on sleep. *Res Nurs Health.* 1992;15:19-28.
14. Ulrich, R., Zimring, C., Zhu, X., DuBose, J., Seo, H., Chol, Y., & Joseph, A. A review of the research literature on evidence-based healthcare design. *Health Environments Research & Design.* 2008;1(3): 61-125.
15. Cox, T. *Stress*. London: Macmillan, 1978.
16. Lazarus, R. S. *Psychological stress and the coping process*. New York: McGraw-Hill, 1966.
17. Lazarus, R. S., & Launier, R. Stress-related transactions between person and environment. In L. A. Pervin & M. Lewis (Eds.), *Perspectives in interactional psychology* (pp. 287-327). New York: Plenum, 1978.
18. Selye, H. *The stress of life*. New York: McGraw-Hill, 1976.
19. Evans, G. Environmental stress and health. In A. Baum, T. Revenson & J. Singer (Eds.). *Handbook of Health Psychology* (pp.365-385). New Jersey: Earlbaum

20. Evans, G. & McCoy, J. When buildings don't work: The role of architecture in human health. *J Environ Psychol*, 1998; 18:85-94.
21. Ulrich, R. Effects of interior design on wellness: Theory and recent scientific research. *J Health Care Inter Des.* 1991;3:97-109.
22. Zimring, C. Stress and the designed environment. *J Soc Issues*. 1981;37:145-171.
23. Zimring, C. Evaluation designed environments. In R. Bechtel, R. Marans & W. Michelson (Eds.), *Methods in environmental behavioral research* (pp. 270-300). Nueva York: UNR, 1987.
24. Zimring, C., Reizenstein, J. & Michelson, W. Design for special population: Mentally retarded person, children, hospital visitors. In D. Stokols & I. Altman (Eds.), *Handbook of environmental psychology.* Vol.2 (pp. 919-949). New York: Plenum, 1987.
25. Haq, S. & Zimring, C. Just down the road a piece: The development of topological knowledge of building layouts. *Environ Behav.* 2003;35(1):132-160.
26. Zimring, C. *The cost of confusion: Non-monetary and monetary costs of the Emory University hospital wayfinding system.* Atlanta: Georgia Institute of Technology, 1990.
27. Ornstein, S. Linking environmental and industrial/organization psychology. In C. Cooper & I. Robertson (Eds.), *International review of industrial /organizational psychology* (pp. 195-228). Chichester, UK: Wiley. 1990
28. Ornstein, S. First impressions of the symbolic meanings connoted by reception area design. *Environ Behav*. 1992;24(1):85-110.
29. Ortega-Andeane, P. Preventive analysis of a hospital setting. In R. Feldman, G. Hardie & D. Saile (Eds.), *24th Conference of Environmental Design Research Association: Power by Design* (pp.50-56). Oklahoma: EDRA, 1993.
30. Shumaker, S. & Reizenstein, J. Environmental factors affecting inpatient stress in acute care hospitals. In G. Evans (Ed.), *Environmental stress* (pp. 179-223). London: Cambridge University Press, 1982.
31. Kaminoff, R. & Proshansky, H. Stress as a consequence of the urban physical environment. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects (pp. 380-409).* New York: MacMillan Publishing, 1982.
32. Kaplan, S. (1983). A model of person-environment compatibility. *Environ Behav.* 1983;15:311-332.
33. Stokols, D. Origins and directions of environment-behavior research. In D. Stokols (Ed.), *Perspectives on environment and behavior. Theory, research and applications* (pp. 149-171). New York: Plenum, 1977.
34. Wicker, A. Processes which mediate behavior-environment congruence. *Behavioral Science.* 1972;17:365.
35. Ortega, P. Evaluación ambiental de un escenario hospitalario. Unpublished Master's Thesis, Universidad Nacional Autonoma de Mexico, 1992.
36. Ortega-Andeane, P. & Urbina-Soria, J. A case study of wayfinding and security in a Mexico city hospital. In D. Lawrence, R. Habe, S. Hacker & S. Sherrod (Eds.), *19th Conference of Environmental Design Research Association: People's need/planet management. Paths to co-existence* (pp.231-236). Oklahoma: EDRA, 1988.
37. Reidl, L, Ortega, P. & Estrada, C. Componentes psicológicos, ambientales y fisiológicos generadores de estrés en una sala de espera. In Guevara, J. & Mercado, S. (Eds.), *Temas Selectos en Psicología Ambiental* (pp. 215-234). México: UNAM, Greco, Fundación Unilibre, 2002.
38. Byrne, B. Structural equation modeling with EQS. New York: Lawrence Earlbaum, 2006.
39. Donabedian, A. Prioridades para el progreso de la evaluación y monitoreo de la calidad de la atención. *Salud Pública de Mex*. 1993; 35(1): 94-97.
40. Donabedian, A. Quality assessment: The industrial model and the health care model. *Clin Perform Qual Health Care.* 1993; 1(1):51-52.
41. Frenk, J. 2003. Discurso del Secretario de Salud. [Document file] Retrieved from: http//www.ssa.gob.mx/v.../2003-03-03-FORO-NACIONAL-DE-CALIDAD-EN SALUD.ht.
42. Bell, P. & Greene, T. Thermal stress: Physiological, comfort, performance and social effects of hot and cold environments. In G. Evans (Ed.), *Environmental stress*. (pp.75-104). London: Cambridge University Press, 1982.
43. Leather, P., Beale, D., Santos, A., Watts, J. & Lee, L. Outcomes of environmental appraisal of different hospital waiting areas. *Environ Behav.* 2003;35(6):842-869.
44. Ingham, B. & Spencer, C. Do comfortable chairs and soft light in the waiting area really help reduce anxiety and improve the practice's image? *Health Psychology Update*. 1997;28:17-20
45. Harris, P.B., McBride, G., Ross, C. & Curtis, L. A place to heal: Environmental sources of satisfaction among hospital patients. *J Appl Soc Psycho.* 2002;32(6):1276-1299.]

ACKNOWLEDGEMENTS

The authors would like to thank the Maricela Irepan for methodological support to the research.

PEER REVIEW

Not commissioned. Externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

FUNDING

UNAM, IN308409.