Helseeffekter fra trebruk – erfaringer fra Norge

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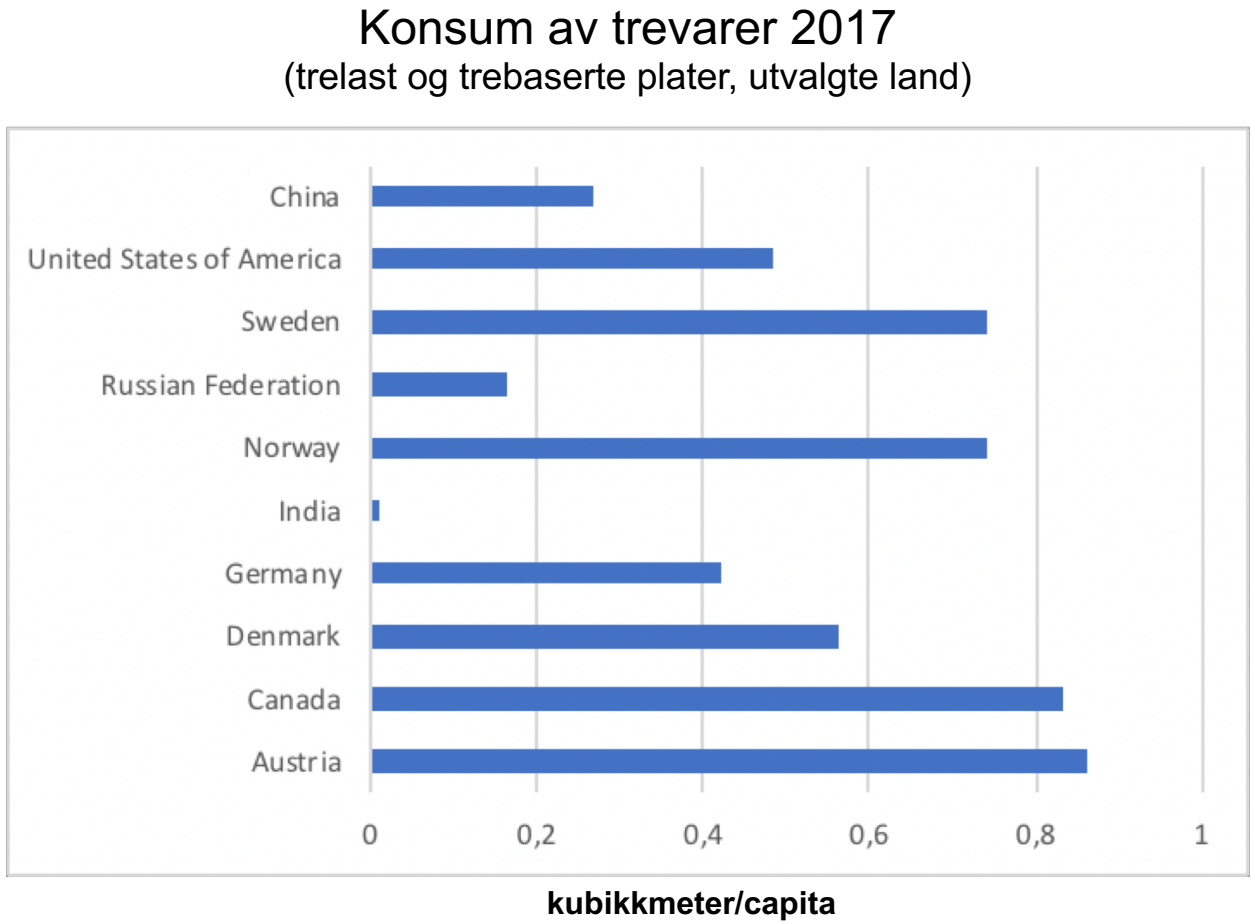
Bruk av tre i bygg

Tre er et

- Naturlig materiale
- Fornybart
- Brukt i en rekke kulturer
- Kan påvirke innemiljøet
  - Fysisk innemiljø
  - Opplevd innemiljø



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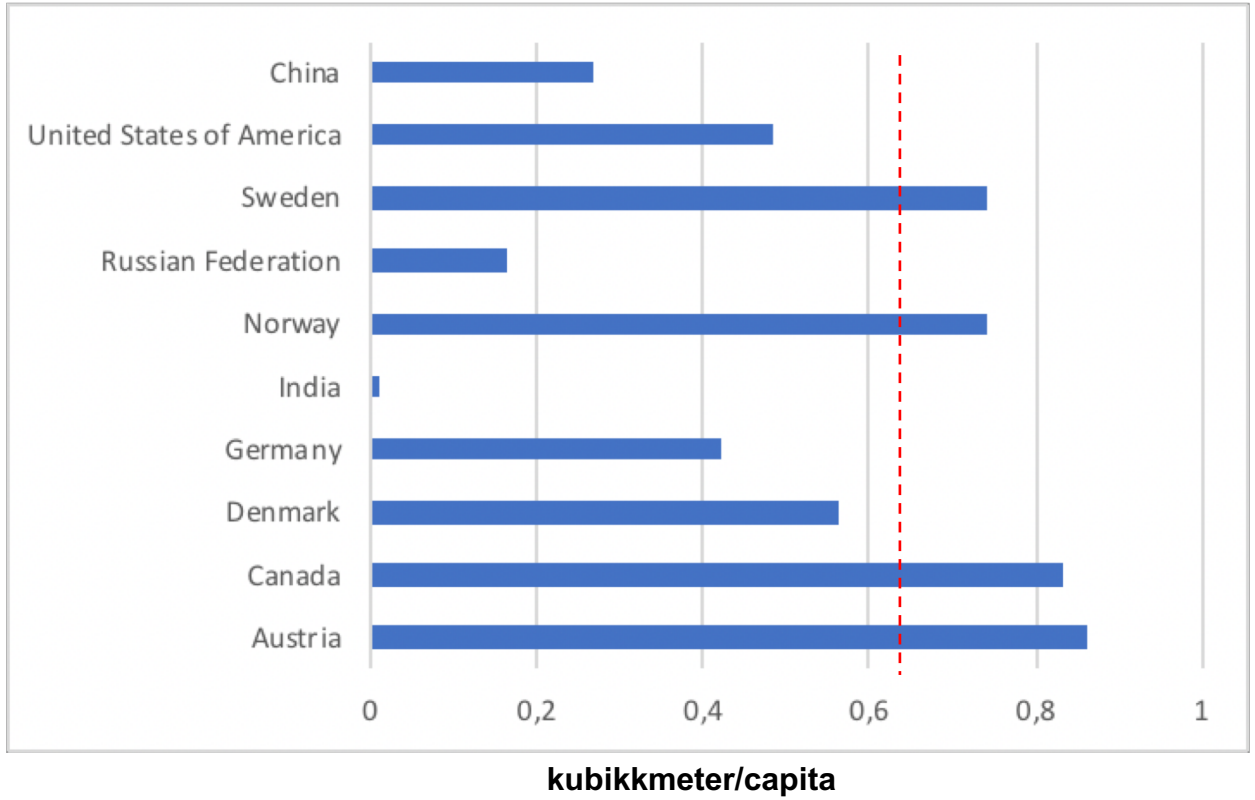
Konsum av trevarer 2017
(trelast og trebaserte plater, utvalgte land)

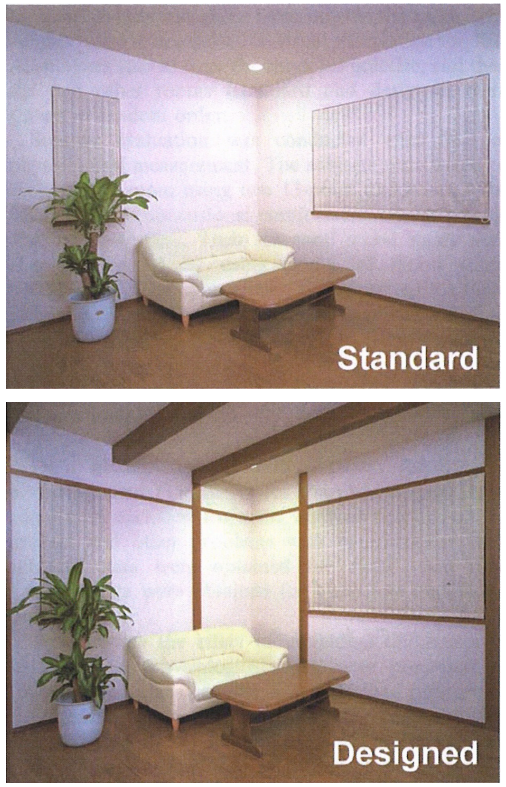


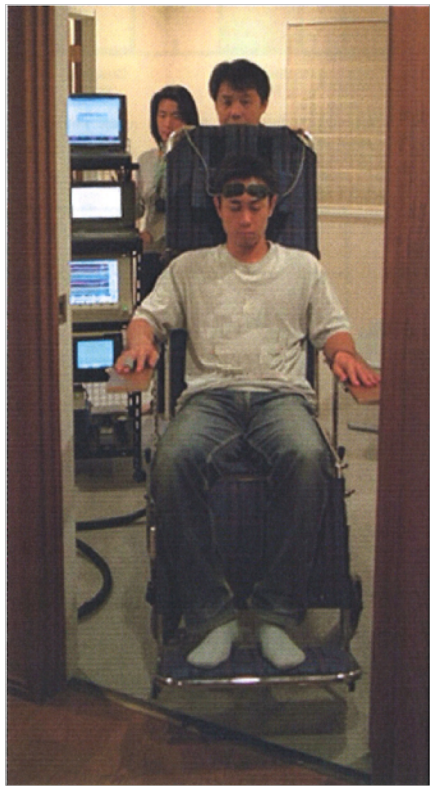
Kunnskapsstatus

- Trebruk påvirke innemiljøet på flere måter
- Luftkvalitet
  - Luftfuktighet
  - Termisk
  - Partikler
  - Avgassing (emisjoner)
- Psykologiske effekter
  - Opplevelse og følelse av velvære
  - Stressreduserende

Psykologiske effekter av trebruk

- Mennesker liker at det er innslag av naturlige materialer i innemiljøet
- Tre oppfattes som et naturlig materiale
- Naturlige elementer kan ha positive psykologiske effekter
- Berøringsegenskaper: berøring av tre virker beroligende
- Trebruk i innemiljø kan ha stress-reduserende effekt





Tsenetsugu, Miyazaki, Sato (2005)

Psykologiske effekter - teorier

Biofil (*Kjærlighet til livet og levende ting*)

- Biofilisk design

Attention Restoration Theory (ART)

- Fanger oppmerksomheten vår
  - Positiv distraksjon
  - Fasinasjon
  - Positive emosjoner

Appearance wood products and psychological well-being

- Spørreundersøkelse (N=119)
- Opplevelse av tre
- Sammenligning av trevirke og substitutter

Material	Warm	Natural	Relaxing
Glass	-0.13	0.06	0.05
Plastic	-0.39	-0.64	-0.43
Steel	-0.74	-0.34	-0.50
Wood	0.91	0.90	0.83
Painted surface	0.48	0.08	0.49
Wallpaper	0.37	-0.05	0.22
Leather	0.33	0.51	0.43
Concrete	-0.66	-0.33	-0.50
Ceramic	-0.05	0.13	0.06
Stone	-0.14	0.81	0.05

Rice, Kozak, Meitner & Cohen (2006)

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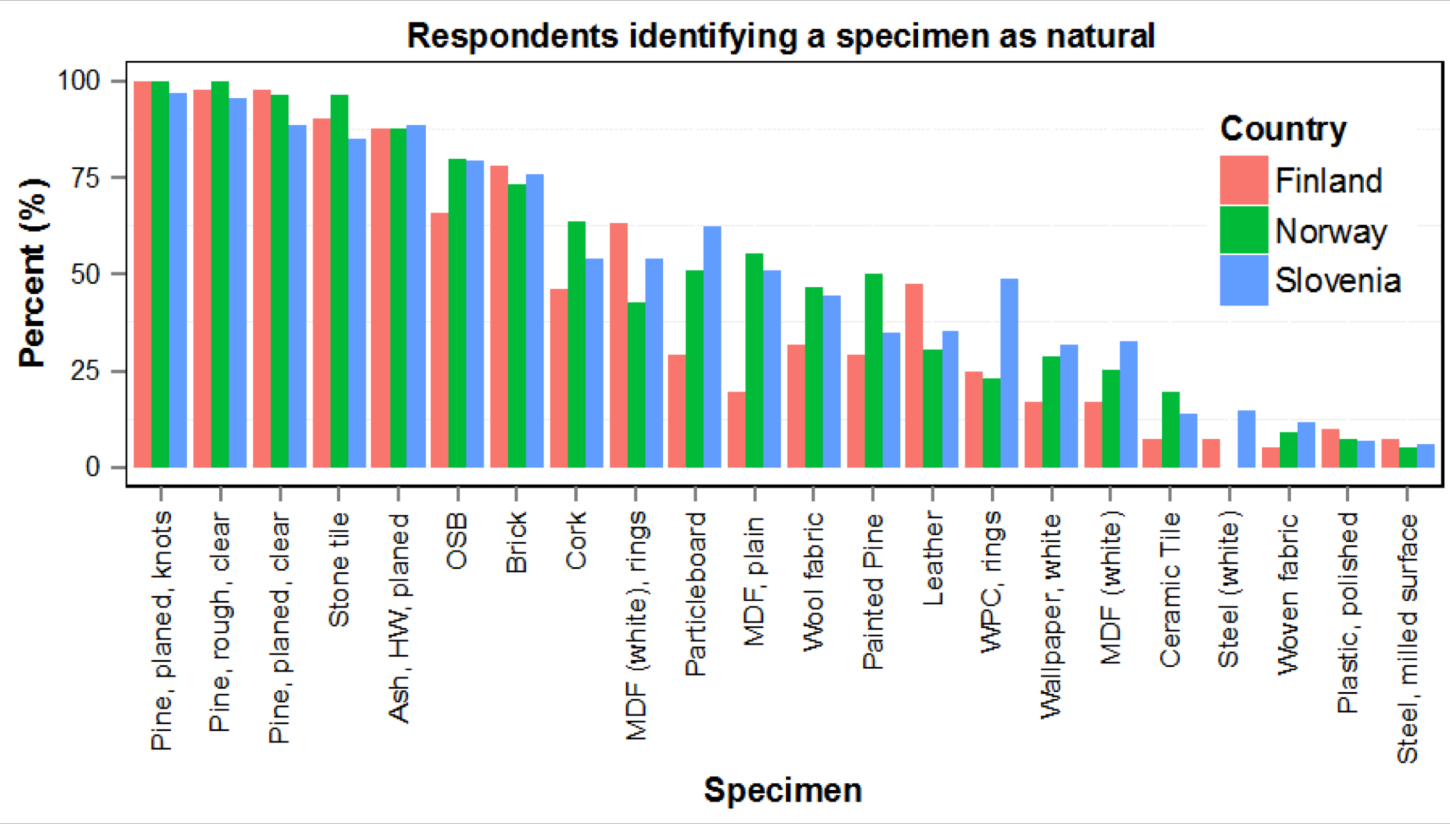
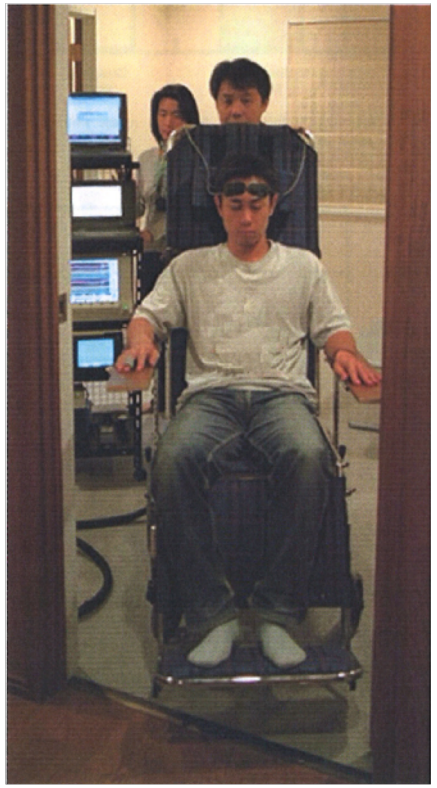
Er trevirke et naturlig element?



Burnard, Nyrud, Bysheim, Kutnar, Vahtikari, Hughes (2016)

Preferanser

Nyrud, Brigslimark, Bysheim (2013)



Tsenetsugu, Miyazaki, Sato (2005)

Restorativ effekt

Fire innredninger

- Treoverflater
- Hvite overflater
- Treoverflater og grønne planter
- Hvite overfalter og grønne planter

Resultat

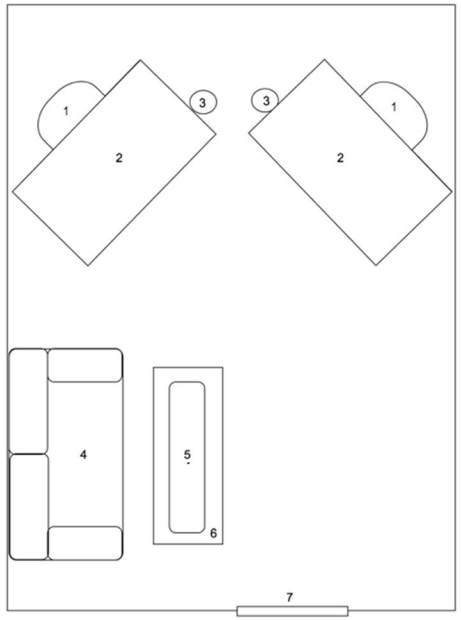
- Treoverflater gjør at personer henter seg raskere inn etter stress

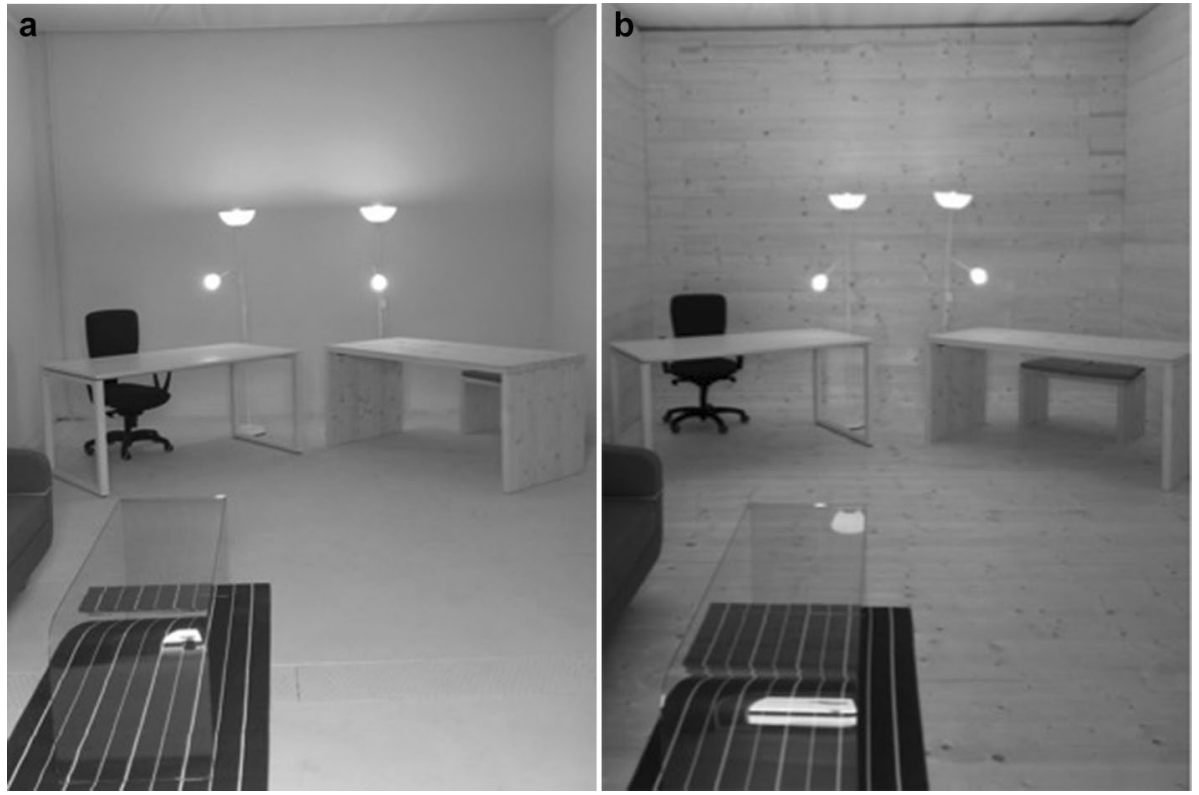
Fell (2010)

Sansning og biophilia

- Tre gir:
  - Følelse av behag
  - Positive følelser
- Flere sanser
- Biophilia

Fig. 2 Photographs of the testing rooms: **a** plaster; **b** wooden room





Demattè, Zucco, Roncato, Gatto, Paulon, Cavalli, Zanetti (2018)

Biophilia

- Deltakere i flere av fokusgruppene beskrev en sammenheng mellom tre / treprodukter og personlige erfaringer fra skog og natur

  Male, Norway, Building Professional: I see naturalness as a personal connection to the material, for example wood out of a forest I have been to or from which I have some good memories. The same might account for stone. You [do not] have these feelings with OSB or particle board.

View Through a Window May Influence Recovery from Surgery

Abstract. *Records on recovery after cholecystectomy of patients in a suburban Pennsylvania hospital between 1972 and 1981 were examined to determine whether assignment to a room with a window view of a natural setting might have restorative influences. Twenty-three surgical patients assigned to rooms with windows looking out on a natural scene had shorter postoperative hospital stays, received fewer negative evaluative comments in nurses' notes, and took fewer potent analgesics than 23 matched patients in similar rooms with windows facing a brick building wall.*

Investigations of aesthetic and affective responses to outdoor visual environments have shown a strong tendency for American and European groups to prefer natural scenes more than urban views that lack natural elements (*1*, *2*). Views of vegetation, and especially water, appear to sustain interest and attention more effectively than urban views of equivalent information rate (*2*). Because most natural views apparently elicit positive feelings, reduce fear in stressed subjects, hold interest, and may block or reduce stressful thoughts, they might also foster restoration from anxiety or stress (*3*).

The restorative effect of natural views on surgical patients was examined in a suburban Pennsylvania hospital (200 beds). Such patients often experience considerable anxiety (*4*, *5*), and hospital confinement limits their access to outdoor environments almost entirely to views through windows. Views to the outside may be especially important to individuals who have unvarying schedules and spend a great deal of time in the same room (*6*), such as surgical patients. It is possible that a hospital window view could influence a patient's emotional state and might accordingly affect recovery.

Records of patients assigned to rooms on the second and third floors of a three-story wing of the hospital between 1972 and 1981 were obtained. Windows on one side of the wing look out on either a small stand of deciduous trees or a brown brick wall (Fig. 1). The same nurses are assigned to the rooms on a given floor; the nurses' stations are located somewhat closer to the wall-view rooms on both floors. The rooms are all for double occupancy and are nearly identical in terms of dimensions, window size, arrangement of beds, furniture, and other major physical characteristics. Each room has a single window 1.83 m high and 1.22 m wide with the lower edge 74 cm above the floor. The size and placement of the window allow an unobstructed view out for a patient lying in bed on either side of the room. The rooms differ, therefore, essentially only in what is seen through the window. Patients are assigned to rooms as they become vacant.

The sample consisted exclusively of patients who had undergone cholecystectomy, a common type of gall bladder surgery. This is a comparatively standardized procedure with similiar postoperative management in the uncomplicated cases. Only cholecystectomies performed between 1 May and 20 October (1972 through 1981) were identified because the trees have foliage during those months. Patients younger than 20 years or older than 69, patients who developed serious complications, and those with a history of psychological disturbances were excluded. Patients were then matched so that one member of each pair had a view of the trees and the other, the brick wall. The criteria for matching were sex, age (within 5 years), being a smoker or nonsmoker, being obese or within normal weight limits, general nature of previous hospitalization, year of surgery (within 6 years), and floor level. Patients on the second floor, a surgical floor, were also matched by the color of their room (rooms on that floor alternate between blue and green). The 6-year interval for year of surgery was established on the basis of inquiries concerning possible changes in procedures. There was no statistically significant difference in the sampling distributions by year of surgery between the wall-view and tree-view groups. The final data base consisted of records of 46 patients grouped into 23 pairs (15 female and 8 male). An attempt was made to match patients by physician, but this was possible for only seven pairs because the number of doctors was large. However, for the remaining pairs the distribution of different physicians was similar in the two groups. There was no instance, for example, when patients of the same doctor all had rooms with same view.

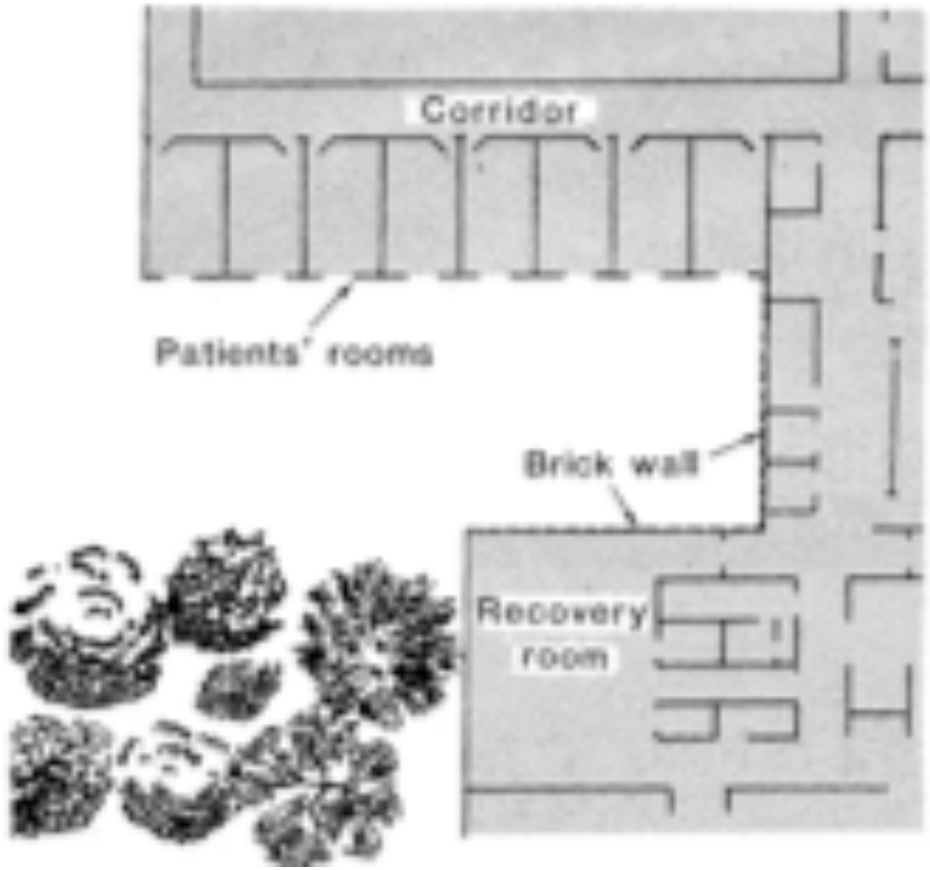
Recovery data were extracted from the records by a nurse with extensive surgical floor experience. The nurse did not know which scene was visible from a patient's window. Five types of information were taken from each record: number of days of hospitalization; number and strength of analgesics each day (*7*); number and strength of doses for anxiety, including tranquilizers and barbiturates, each day (*8*); minor complications, such as persistent headache and nausea requiring medication—symptoms which are considered to result frequently from conversion reactions (*9*); and all nurses' notes relating to a patient's condition or course of recovery.

Length of hospitalization was defined as day of surgery to day of discharge. These data were assumed to be only ordinal because surgery was performed at different times of day and discharge times were somewhat different. The records showed that patients with window views of the trees spent less time in the hospital than those with views of the brick wall: 7.96 days compared with 8.70 days per patient [Wilcoxon matched-pairs signed-ranks analysis, $T(17) = 35$, $z = 1.965$, $P = 0.025$].

Nurses' notes consisted of comments about the patient's condition written during the postsurgical period ending at midnight of the seventh recovery day after the day of surgery. Notes were classified as negative or positive—for example, negative notes included "upset and crying" or "needs much encouragement," and positive notes included "in good spirits" and "moving well." More negative notes were made on patients with the brick wall view: 3.96 per patient compared to 1.13 per patient with the tree view [Wilcoxon matched-pairs signed-ranks analysis, $T(21) = 15$, $z = 3.49$, $P < 0.001$]. Although more

Table 1. Comparison of analgesic doses per patient for wall-view and tree-view groups.

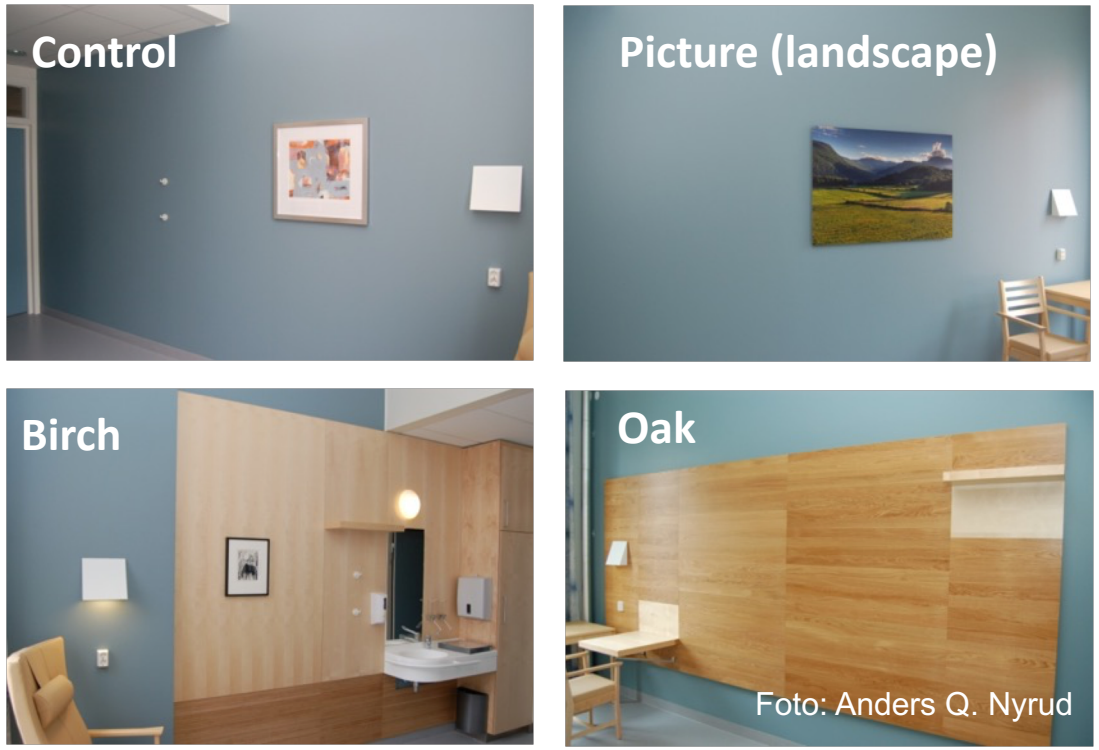
Analgesic strength	Number of doses					
	Days 0–1		Days 2–5		Days 6–7	
	Wall group	Tree group	Wall group	Tree group	Wall group	Tree group
Strong	2.56	2.40	2.48	0.96	0.22	0.17
Moderate	4.00	5.00	3.65	1.74	0.35	0.17
Weak	0.23	0.30	2.57	5.39	0.96	1.09



Ulrich, RS. 1984. View through a window may influence recovery from surgery. Science.

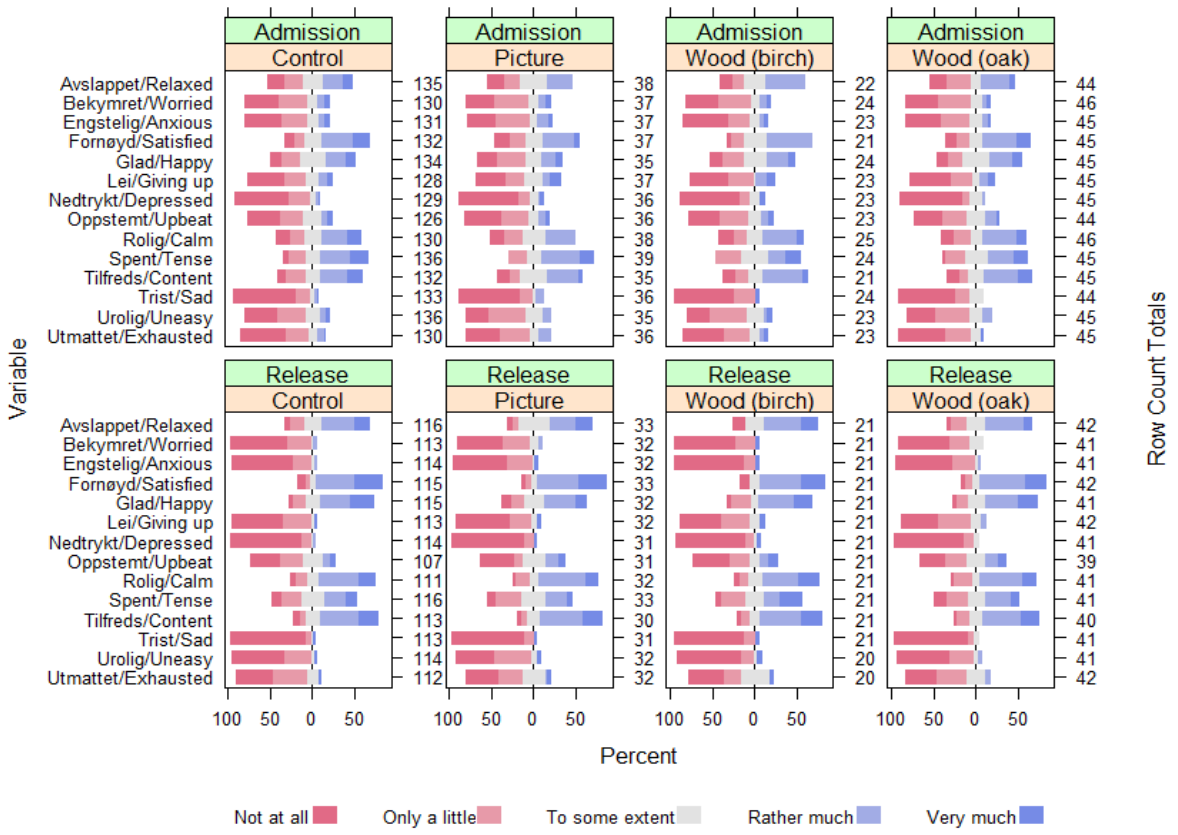
Ulrich 1984 v.s. *Nyrud, Bysheim & Bringslimark 2017*

- Tre på pasientrom
- Eksperimentell setting i sykehusmiljø
- Fire typer pasientrom
- 210 deltakere
- Emosjoner
- Smerte og stress
- Andre helseutfall



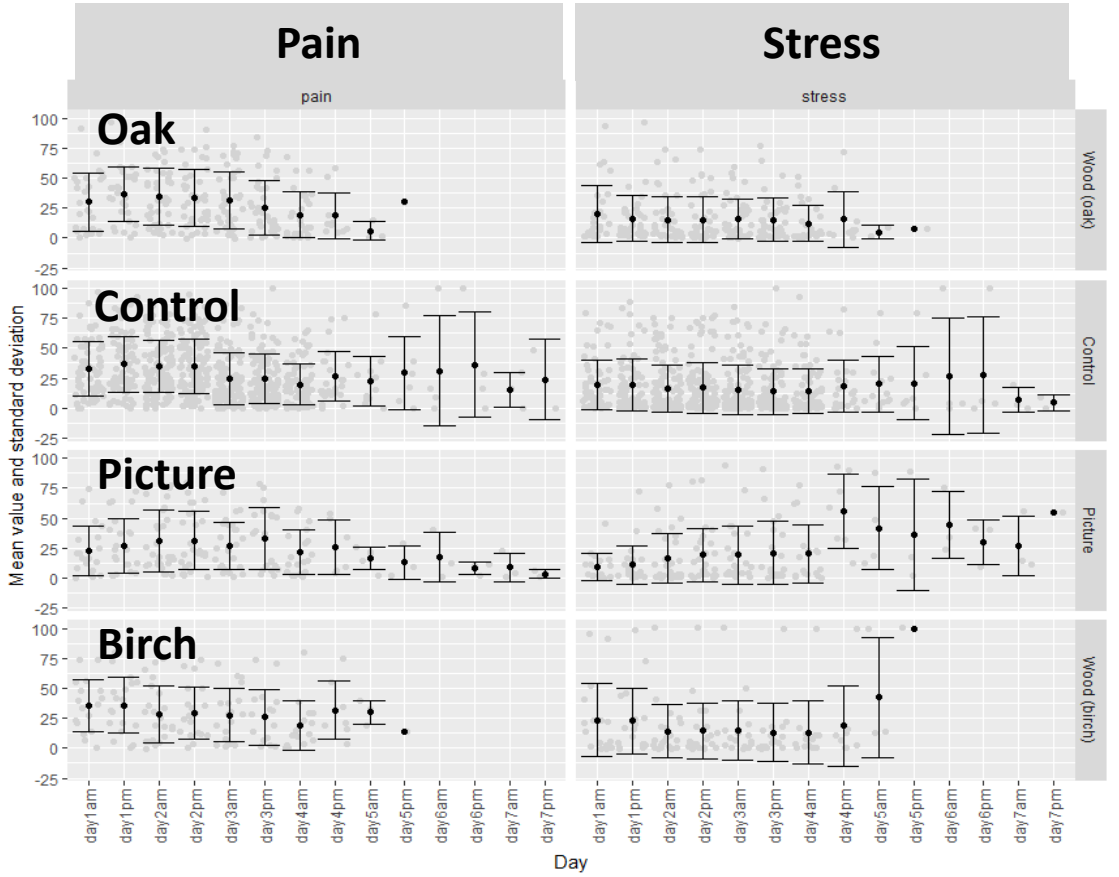
Resultater

- Eksperimentell setting i sykehusmiljø
- Fire typer pasientrom
- 210 deltakere
- Emosjoner
  - Ankomst
  - Utskrivning
  - Lignende resultater for alle rom



Resultater

- Eksperimentell setting i sykehusmiljø
- Fire typer pasientrom
- 210 deltakere
- Emosjoner: lignende resultater for alle rom
- Smerte og stress
  - Opplevd smerte avtar over tid
  - Opplevd stress varierer mellom rom
  - Liggetid?



Helseeffekter av trebruk

- Tre påvirker innemiljø
- Vi har resultater som tilsier at tre har en positiv psykologisk effekt
- Vi vet ikke nok om hvorfor tre har denne effekten
- Bevisst bruk av tre i design og formgivning er første steg

Nyrud, Brigslimark, Bysheim (2013)

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