Naturally surveilled space: the design of a male drug rehabilitation center

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Abstract. The increase of drug addicts in Indonesia has not been supported by adequate facilities, both quantitatively and qualitatively. Despite being treated in a rehabilitation center, drug addicts may still use drugs surreptitiously and put themselves in danger. Architectural design may contribute to this either positively or negatively. This article elaborates a therapeutic design of a male rehabilitation center in the borderland of Bandung city, Indonesia. Employing the notion of natural surveillance, the rehabilitation center is designed to allow continual control over attendees without them feeling suppressed. The center design uses the behavioral approach to consider both attendees’ physical and psychological comforts, as well as their security. Building masses are designed in a way that forms an inward orientation and are laid out circularly according to the therapy processes that attendees must undertake. Moreover, rooms are planned differently in response to attendees’ unique conditions and restrictive physical requirements, such as their restriction on lighting and requirement of water for treatment. The landscape uses shady trees and vegetations as natural borders to demarcate the private zone, where attendees live, from the public area, where visitors may enter. The design is intended to provide a model for a responsive drug rehabilitation center that facilitates drug addicts’ recovery.

1. Drug rehabilitation center and the spatial problems
A year ago, 35 drug addicts who were being rehabilitated in Lido Rehabilitation Center in Bogor were reported escaping from the center. They defeated the security officers and forcefully opened the main gate of the center. The patients held an after-prayer meeting in the mosque to arrange the escape. It was suspected that they did so because of the environmental high pressure. In many other rehabilitation centers, patients are still able to consume drugs surreptitiously. There are three possible reasons underlying these conditions. First, the center is not designed to provide rooms for patients according to their addiction characteristics. This has resulted in discomfort because of patients’ sensitivity differences. Unclassified spaces may also allow bullying to happen among patients. Second, the center is designed like a jail, in which the victims are treated as inmates and thus live under high pressure. Third, the design of the center’s public spaces has posited patients to be out of surveillance and thus obtain the opportunity to arrange the escape.

Data launched by Indonesia’s Ministry of Health reveals that there has been an increasing number of the drug victims in Indonesia within the last five years [1]. The cases involve people of all ages, including children and teenagers, and both sexes. Data shows that the highest number of drug users is male, 29 years old or older. The condition is worsened by the fact that death caused by drug abuse is...
40 people daily, particularly because only 10% of users obtain rehabilitation therapy. This has not conformed the policy made by the National Narcotics Board (Law No. 35 of 2009 on Narcotics, Article 54), in accordance with the United Nations Office on Drugs and Crime, according to which drug victims and addicts have to be rehabilitated, instead of being jailed [2]. Rehabilitation is a recovery process that drug victims and drug addicts should undertake in order to cease their dependency on psychotropic substances. Rehabilitation process consists of medical rehabilitation method, therapeutic community rehabilitation method, and religious rehabilitation method. Medical rehabilitation method is a hospital-based recovery method, which involves medical treatment and pharmacotherapy in order to reduce patients’ symptoms and behavior changes. In therapeutic community rehabilitation method, a patient is encouraged to change her/his self-perception and to find her/himself. Patients are treated using behavioral approach through a reward-and-punishment system and group approach. The religious rehabilitation method employs spiritual and cognitive approach in treating patients.

Existing rehabilitation centers mostly have not served their optimum functions. Our preliminary studies show that they still lack in security system, resulting in patients’ escape and bullying. Just like Lido’s case, 35 patients could runaway because they have a chance to do so. They were hold their preparation to escape inside Lido’s area. It is showed that some rehabilitation centers still have blind spots. In 2004, Prime Manager in Lido stated that more than 97% of patients who were escape in the middle way of treatment process were come back in some months later and restart the program from the beginning phase again[3]. Those problems showed that rehabilitation centers still lack with surveillance and also a comfortable environment to live in. The low supervision even allows hidden drug transactions and drug consumptions by patients. It also provides patients with the opportunity for hurting themselves due to drug withdrawal. Most rehabilitation centers also have not considered patients’ specificities and this has resulted in their discomfort. This article explores the application of a therapeutic design to a male rehabilitation center in Mt. Manglayang hillside. It provides a model of a behavior-sensitive design for drug addicts’ recovery.

2. Design method
We apply behavioral approach in the design of the male rehabilitation center. Prior to the design, we completed studies on the classification of drug consumers, drug addicts’ behaviors, and their spatial needs. We conducted interviews with psychiatrists, counselors, psychologists, and medical practitioners on drug characteristics and the addicts’ spatial behaviors. We also perform participant observations in a number of drug rehabilitation centers, such as Lido Therapy and Rehabilitation Unit in Bogor, FAN Campus Bogor, Palma Asylum in Cisarua, and Putera Parmadi Social Rehabilitation Center in Lembang. We observed the activities, the spatial arrangement and the use of spaces in the centers. We also inspected users’ behaviors, including their motivations, social interactions, privacy, comfort, and character building. Data obtained is used to formulate the design concepts.

3. The design concepts and the design of a therapeutic space
The natural surveillance in the design of this male rehabilitation center is developed based on Jeremy Bentham’s idea of panopticon (1787) and Oscar Newman’s natural surveillance. Bentham’s panopticon is a surveilling system embedded in the architectural space of prison and other correctional facilities. Bentham proposed the use of panopticon to allow surveillance on all inmates through the use of a surveilling tower at the center of the prison. Even in the absence of the guard, inmates always feel that they are being surveilled due to the presence of the surveilling tower [4]. The main idea of the panopticon is the efficiency and optimization of one-direction control from the tower to the cells.

In a similar way to the panopticon system, Newman’s natural surveillance controls crime in public areas. Newman identifies that most crimes in public spaces occur in the visually deprived spots, where activities rarely take place. Therefore he proposes improvements in “surveillance capacity,” which he defines as the ability to observe the public areas and to make a person who enters the areas continually feel being observed. Such an area will discourage crime, reduce inhabitants’ fear and
anxieties, and improve their feeling of being secure. Moreover, this will encourage inhabitants’ use of the area and in turn will improve its security as a result of the intensive use. Newman has found that such a spatial characteristic is found in a public area that is surrounded by building openings or close to public circulations [5].

We propose the combination of both surveillance systems in a therapeutic rehabilitation space. The design concepts comprise site zoning, site circulation, building masses, interior design, and landscaping.

3.1. Site zoning

A rehabilitation center’s spatial arrangement deals with who can or cannot enter to guarantee that the patients are safe from outsiders, other patients, and themselves. Thus, the site is divided into zones according to their security level, which also organizes users according to their accessibility (Fig. 1). The private zone is located at the innermost area where the psychological rehabilitation unit, the social rehabilitation unit, the detoxification facility and sport facilities are situated. This zone is restricted to patients and staffs. Low sound pollution and nice scenery around the building in this zone also help patients’ healing process. Public area is located at the front of the site to which visitors enter. This zone includes a parking area for visitors. The semipublic zone, comprising a general service unit, an emergency unit, and an outpatient unit, is located between the public zone and the private zone. In order to limit access to the inner site, service areas are also arranged on this side. An inner courtyard, in the middle of which stands a control tower, separates the semipublic zone from the private zone. The control tower generates a sense of surveillance among patients.

3.2. Site circulation

The site circulation considers the maximum surveillance on the site. Therefore, there are only a single access for the public and one for the service (Fig. 2).

3.3. Building masses

The shape of the building masses is a transformation a circle (Fig. 3a). The circle’s round character generates an inward orientation (Fig. 3b), so it can increase the surveillance, which is good for rehabilitation center. Masses must not have any dead space because it can increase the patients’ risk for using drugs inside the rehabilitation center. Furthermore, the building masses are laid according to the rehabilitation procedure as
follow: the general service, the emergency unit, the detoxification unit, the psychological rehabilitation unit, and the social rehabilitation unit (fig. 3c). Developed from a circle, the units are arranged in a circular way, which in addition to facilitating flowing activity transitions also enabling maximum security and surveillance system. The open visual access and unisolated social space allow constant observation, which is essential to a secure environment [6].

Fig. 3. (a) circle shape, (b) inward orientation, (c) treatment process, (d) building masses.

Different from other centers, in which patients’ activities are located on the upper floors, while public activities are on the ground floor, our design proposes that all activities are accommodated on the ground floor in order to minimize accidents. We also separate rehabilitation stages into different buildings to facilitate maximum building function (fig. 3d).

3.4. Interior design
The interior of the buildings reflects the reward system that is applied to all patients. Those who successfully complete a step of therapy are advanced to the next step in another building unit whose facilities are better and more comfortable. This system is applied as a way to motivate patients to recover from addiction.

At the detoxification phase, patients are not able to control themselves, thus, they are assigned an isolated, yet under observation, room (Fig. 4).

Fig. 4. (left) surveillance at the detoxification phase, (right) the isolated patient uses glasses for constant observation by staffs.
In detoxification phase, patients also need special requirements for their rooms. Patients’ drug’s effects are divided into three types of rooms. First, small rooms with acoustic wall for patients with sensitive hearing and difficult to concentrate. Second, rooms with acoustic wall and no windows to accommodate patients with sensitive sight and sensitive hearing. Last, wider rooms with acoustic wall for patients with sensitive earing and hyperactive.

At the psychological rehabilitation phase, patients are able to control their own mind, but still unsure with what they’re doing. At this stage, they need more encouragement to release themselves from drug dependency. Thus the design of the facility emphasizes more on social interaction. The facility is designed to allow more caring and motivating interactions among patients as shown in the provision of a number of lounges and common bedrooms. By sharing the rooms where private and public activities take place, patients are expected to grow encouragement among them (Fig. 5).

![Psychological Rehabilitation Plan](image)

Fig. 5. Surveillance at the psychological rehabilitation phase.

At the social rehabilitation phase, patients have already obtained their self-confidence so that they can interact with the outside world, yet still under supervision. Rooms in this facility allow more privacy for patients as found in bedrooms and toilets (Fig. 6).

![Social Rehabilitation Plan](image)

Fig. 6. Privacy for patients at the social rehabilitation phase.
Most penal facility design limits inmates’ and patients’ freedom of movement through the use of trellis. However, such a design has led to inhabitants’ frustration and aggression [7]. In most rehabilitation centers, the supervision room is located at the middle of each floor level. This design instead proposes that the room is positioned in front of patient’s rooms. This will enable a better control to patients, in addition to facilitating easier access when emergency situations occur. In the psychological rehabilitation unit, the supervision room is located in common rooms (Fig. 6a). Moreover, public spaces such as prayer room and dining room are not equipped with a supervision room but are designed as open spaces. Such a design generates a sense of surveillance among patients. In the detoxification building, the supervision room is placed outside the patients’ room, which uses glass wall (Fig. 6b).

![Fig. 6. (a) Supervision room is placed inside the patients’ room; (b) Supervision room is placed outside the patients’ room.](image)

3.5. Landscaping
Vegetations, consisting of trees and shrubs, are planted surrounding buildings in order to form subtle borders. They also function to demarcate the public, semipublic, and private areas in the center. Vegetations and greenery create relaxing environment that is significant in a therapeutic place. Additionally, trees also serve to give direction to users and visitors. The landscape also includes water and color consideration in the design. Water is a critical element in drug addiction therapy.

![Fig. 7. (a) Vegetations to create relaxing environment. (b) Vegetations as subtle borders.](image)
4. Conclusion

Compared to most rehabilitation centers, the design that we propose considers patients’ unique characteristics according to their phase of therapy. The site and building zoning is designed to enable maximum security and surveillance. So is the interior. Walls may create extra pressure to patients. To avoid such an architectural expression, the buildings are laid in circular arrangement. Thus while forming an inward orientation toward the inner court, the buildings themselves function as fences that restrict patients’ movements within the buildings while creating a system of natural surveillance to them. Each of rehabilitation phase has different interior design aspects, such as room arrangement and material, to accommodate patients’ unique characteristics. Landscape uses water and vegetations as part of treatments method and also used to create subtle borders to divide zones in the center.

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