

USE OF A TOKEN ECONOMY TO INCREASE COMPLIANCE DURING HEMODIALYSIS

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We report the effects of using a token economy to treat noncompliant behavior in a 10-year-old male hemodialysis patient. The results of an ABAB design indicated that the intervention increased compliant behavior during both treatment phases and that compliance was maintained at 3- and 6-month follow-up observations.

DESCRIPTORS: behavioral pediatrics, token economy, chronic renal failure

Patients with chronic renal failure must adhere to complicated treatment regimens that typically include three weekly hemodialysis sessions (usually lasting 3 to 4 hr), strict dietary and fluid restrictions, and complicated medication regimens. Although adherence to treatment regimens is crucial to avoiding medical complications, estimates indicate that between 25% and 86% of hemodialysis patients are noncompliant with treatment recommendations (Bame, Petersen, & Wray, 1993).

Researchers have used token economies to modify patients' behavior between hemodialysis sessions to increase adherence to dietary and fluid restrictions (e.g., Hegel, Ayllon, Thiel, & Oulton, 1992; Magrab & Papadopoulou, 1977). However, we found no published reports of the use of token economies to modify noncompliant behavior during hemodialysis sessions. Given that failure to comply with treatment regimens during hemodialysis has been linked to increased morbidity, hospitalization, and removal of vascular access sites, the ability to increase compliance during hemodialysis may help to avoid serious medical complications. There-

fore, we evaluated the use of a token economy to treat a boy who failed to comply with vascular access cleansing prior to hemodialysis, initiation of hemodialysis, and procedures during hemodialysis such as blood pressure measurements and exercises designed to reduce the risk of muscle cramps.

METHOD

Patient

The patient was a 10-year-old male with end-stage renal disease who had received hemodialysis for 2 years and 3 months. The current intervention was prompted by an increase in noncompliant behavior that ultimately reduced staff availability for other patients. Previous attempts to increase compliance had not been successful.

Measurement

Noncompliance was recorded by one of the patient's three primary nurses during his 4-hr hemodialysis sessions. Noncompliance was defined operationally as screaming at the nurses, kicking or hitting the nurses, or any movement to avoid or hinder the implementation of a medical procedure (complete definitions are available upon request). To check interrater reliability, a primary nurse and one assistant independently recorded the occurrence of noncompliant events during 53% of the sessions. Raters achieved 90% agree-

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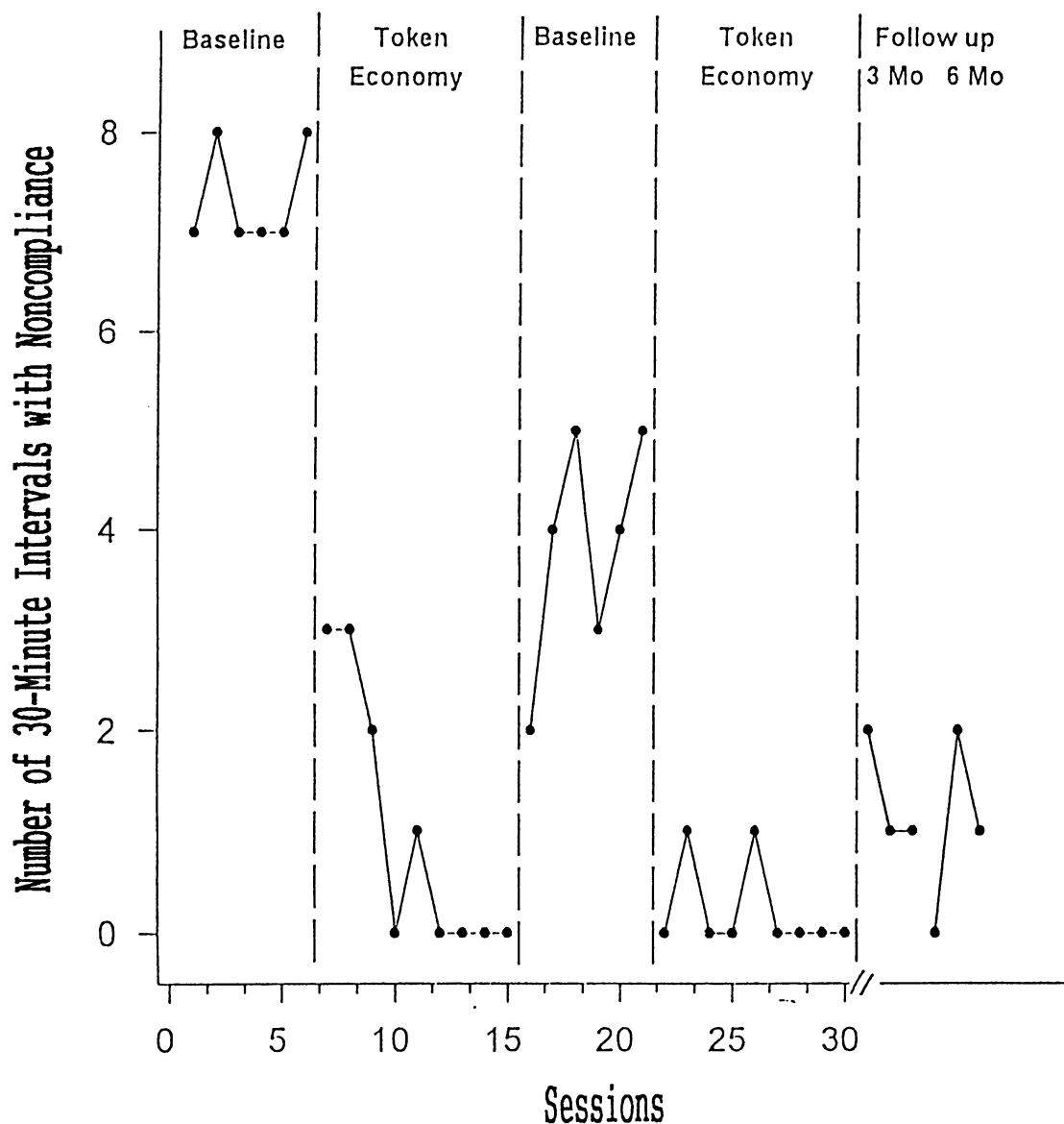


Figure 1. Number of 30-min intervals in which noncompliance occurred across conditions.

ment for the baseline sessions and 86% agreement for the token economy and follow-up sessions (calculated by dividing the number of agreements by the number of agreements plus the number of disagreements and multiplying by 100%).

Procedure and Experimental Design

Before beginning the token system, the intervention was explained to the patient, his

parents, and the nursing staff. During the intervention, the patient was observed for the entire 4-hr session and was awarded one token for every 30-min interval with no noncompliant behavior. The primary nurse for that day was responsible for recording earned tokens on a chart next to his bed. Thus, eight tokens potentially could be earned in one session. At the end of each week, tokens could be exchanged for prizes

(e.g., baseball cards, comic books, and small toys). The value of a given prize was initially determined by having the patient rank the available prizes. No response cost or other forms of punishment were used in conjunction with the token economy.

To evaluate the effectiveness of the intervention, baseline and token economy conditions were alternated in an ABAB design. The token system was faded gradually over the course of several weeks. Follow-up data were collected 3 and 6 months after termination of the intervention.

RESULTS AND DISCUSSION

The token system reduced noncompliant behavior from an average of 7.3 to 1.0 intervals of noncompliance per session (see Figure 1). When the token system was withdrawn, noncompliant behavior increased to an average of 3.8 intervals per session. In the second token economy phase, noncompliant behavior decreased to an average of 0.22 intervals per session. The 3- and 6-month follow-up data illustrate that the noncompliant behavior remained at an average of 1.3 and 1.0 intervals per session, respectively.

The results support the use of a token economy intervention to increase compliance during hemodialysis. The success of the intervention was noticed by the nursing staff and the attending physician, resulting in more requests for behavioral interventions from the hemodialysis unit. The patient also reported enjoying the token system and frequently expressed a desire to earn as many tokens as possible.

One limitation of the study is that it involved an intervention that was not linked empirically to variables maintaining non-compliance. Observation prior to the intervention revealed two possible reinforcers: staff attention and physical contact. However, because many hemodialysis procedures

(e.g., access cleansing, dialysis initiation, and blood pressure checks) require both staff attention and physical contact and must be completed on regularly scheduled intervals, it would have been difficult to withhold such potential reinforcers or to make them contingent upon compliant behavior. Thus, a token economy appeared to be a potentially viable alternative.

One caveat to consider before implementing a similar token economy is the choice of reinforcement schedule. The 30-min fixed-interval schedule used in this study was selected based on preintervention feedback from the nursing staff regarding what procedure they believed would be easiest for them to administer consistently throughout the treatment. Although the schedule was effective with the boy in this study, shorter or more variable schedules may be necessary in other cases.

In conclusion, our results add to the research on the token economy by showing its beneficial effect on a potentially life-threatening form of medical noncompliance. Future research would benefit the field by exploring applications of the token economy for other medically related behavior problems.

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