

Mortality 5 Years After Detoxification and Counseling as Indicated by Psychometric Tests

John E. Berg, M.D., Ph.D.,¹ and Steinar Andersen, B.A.^{1,2}

Residential detoxification of substance abusers, using medication to alleviate withdrawal symptoms, often fails to ensure further abstinence and predict which clients have the greatest risk of morbidity after detoxification. Prolonging the detoxification period with a counseling period has been shown to enhance compliance to counseling. Sixty-one (61) substance abusers (mean age: 31.3 years; 22 women) with a mean length of abuse of 16 years in 1993–1994 were tested using two psychometric tests and then followed up in 1999 according to mortality. Mean value on Antonovsky's Sense of Coherence (SOC) scale was 2.98 and on Hopkins Symptom Checklist (HSCL-24) was 2.06, indicating postdetoxification coping problems and distress. Thirteen (13) abusers died during follow-up. Cox regression of mortality showed increased risk in men, and also an increased risk of dying in the observation period with lower SOC score ($p < .01$), but not with increasing HSCL-24 score. Logistic regression indicated a 3.6 times higher risk of dying in the observation period if the SOC score was 1 point lower (on a scale range from 1 to 5). An increased mortality in drug addicts leaving the facility with an SOC value below 3.00 after a 4-week detoxification and counseling stay is thus strongly supported by the data. Antonovsky's SOC scale thus seems to be a good indicator of future mortality.

KEY WORDS: drug abuse; sense of coherence; mortality; comorbidity.

INTRODUCTION

Morbidity and mortality among substance abusers is high compared to age-specific mortality in the general population (1–7). Mortality following abuse of alcohol alone is far less. The mortality observed after residential treatment or rehabilitation is seemingly unpredictable, not substantially matched to treatment modality (8, 9). It is, thus, difficult to predict the outcome of any treatment or rehabilitation measure, especially with easy tools in a residential setting. It is sug-

¹Drug Research Group, Department of Community Medicine, University of Oslo Blindern, 0318 Oslo, Norway. Phone: 47-22858283; Fax: 47-22858280.

²Deceased.

gested that treatment and rehabilitation efforts may not be organized in a way that facilitates the road toward some form of abstinence (10–12).

Overdose, not illness or accidents, is the cause of mortality in the great majority of drug addict deaths (7). Many addicts, however, report frequent suicide attempts. In a Swedish follow-up of 125 drug addicts, 45% reported having attempted suicide at some point in their life because of loss of a person they loved or feelings of loneliness (13). Overdoses seem to be more frequent in opioid abusers who also use benzodiazepines (14). However, there are divergent indicators of future suicides or overdoses, poor social adjustment being one for the overdose cases (15, 16). In a study of 482 drug abusers in resident treatment in 1984–1995, 59 out of 97 deaths after 10 years were due to overdose, whereas 21 deaths were due to suicide, accidents, and homicide, thus indicating that the drug-using behavior outnumbers suicide as cause of death (2).

Residential treatment and vocational and psychosocial rehabilitation facilities are some of a diverse range of possible treatments offered to Norwegian clients. They are not obliged to follow a prescribed route through these facilities. During a career of drug abuse of 10–15 years, some addicts visit between 30–40 facilities (2). This may be the result of the difficulties inherent in matching clients to treatment (17–19). Another explanation may be the lack of insight into which institutions effectively promote rehabilitation, and if they do, purportedly in which order. In Scandinavia, drug treatment is free of charge, and this may encourage excess use of facilities. As few clear-cut outcome measures are available, both clients and counselors seem rather free in choosing the next step in the rehabilitation process.

Tests that may help in the process of client matching after detoxification may be interesting both from a mortality point of view and toward the better use of rehabilitative resources. Several tests have been proposed and used in facilities (20–22), but the generally low success rate of treatment suggests the need for better tests. Such tests should not only be valid and reliable but also easy to administer by staff not necessarily educated as medical doctors or psychologists. Tests that could give an idea of which clients would profit from motivational initiatives should be welcomed.

A residential counseling unit connected to a detoxification unit established in 1993 gave us the opportunity to choose two purportedly simple psychometric tests and follow-up a cohort of clients 5 years later with special regard to mortality.

MATERIAL AND METHODS

The city of Oslo has four detoxification units for alcohol and substance abusers, one of which was the object of the present study. It admits addicts mainly by agreement with social aid offices or treatment facilities as part of a more comprehensive treatment or rehabilitation plan. The municipal social aid offices are responsible for initiating all treatments for alcohol and drug abuse in Oslo. Better matching of clients to facilities is the purpose of the postdetoxification–counseling unit connected to the detox unit of study. Detoxification was “cold turkey” from all addictive

substances, but supported by anticonvulsants, antiemetics, neuroleptics, and clonidine when necessary.

Substance abusers were recruited to a stay of 3 weeks in a residential setting, including counseling about treatment and rehabilitation possibilities and some individual and group therapy activities. No confrontational or in-depth psychiatric techniques were used.

The substance abusers all satisfied the DSM-III criteria for a diagnosis (305.x). Substances abused were mainly opiates, but the majority also used benzodiazepines, hashish, and, to a lesser extent, amphetamines as addictive substances. Benzodiazepines and hashish were usually injected.

Sixty-three (63) consecutive clients were interviewed from April 1993 to August 1994 by the author (JEB) as part of his clinical work. The interviews took place midway during the clients' stay at the counseling unit. The client-completed questionnaires were completed in less than 15 minutes. One client did not manage to complete the questionnaires due to a psychotic reaction, and one client refused to participate. Thus 61 questionnaires containing the two psychometric tests described below could be analyzed. Sociodemographic data were taken from the regular client files.

Two psychometric tests were used. The Hopkins Symptoms Checklist (HSCL-24) is an instrument that, in its full form (HSCL-90), was developed to diagnose psychiatric illness such as depression and anxiety. The application of this instrument has been widespread in psychiatric and normal populations, and its reliability has been established (23, 24). A version of this test with 90 questions has been used with substance abusers to assess mental symptoms (25–27). Ravndal and Vaglum (26) found no difference between dropouts and completers at a Phoenix House treatment facility on the HSCL-90, but the overall dropout rate in the study was high (70%). A shorter version (HSCL-24) has been advocated to identify *distress in life*; for example, when experiencing unemployment (28). Some clients had HSCL values higher than 2.5, indicating a distress so severe that psychological or medical treatment would have been indicated in the period following the resident stay.

Antonovsky's Sense of Coherence (SOC) scale was developed to study the ability of a person to cope with the toils of daily life (29, 30). The coherence scale is described as "a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that i) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; ii) the resources are available to one to meet the demands posed by these stimuli; and iii) these demands are challenges, worthy of investment and engagement" (Ref. 29; p. 19). The three components are called *comprehensibility*, *manageability*, and *meaningfulness*. Antonovsky opposed health-ease and dis-ease as the ends of a continuum, and argued for a more salutogenetic (health-promoting) approach to treatment evaluation, emphasizing the resources of the clients, not their problem areas. The test has been used and validated with several population types (30, 31). Its internal consistency has been from 0.82 to 0.95 with Cronbach's alpha. Two-year test-retest correlation was 0.54. A score higher than 3.5 may be viewed as normal, whereas a score between 3.0 and 3.5 may be found, for instance, in students, who are typically much in doubt about their

future (30). In this article, the limit for a normal score was set at 3.0, suggesting that drug addicts, as students, may often temporarily lack manageability in life. Because many clients from a clinical viewpoint invariably show severe problems in organizing their lives, the test was applied in the counselling unit.

Antonovsky's Sense of Coherence Scale, 9-item version³

1. How often have you been surprised by the behavior of people you thought you knew well?
2. How often are you in situations where you don't know what to do?
3. How often do you have mixed-up ideas about things?
4. How often do you feel that you are treated unfairly?
5. Some people feel as though bad things are always happening to them. How often have you felt this way?
6. How often have you been disappointed by people you counted on?
7. How often do you feel that things you do in your daily life have little meaning?
8. Up to now, your life has had clear goals or purpose.
9. The things you do every day are a source of deep pleasure and satisfaction to you.

In May 1999, a search of the public death register was performed giving the number of clients who had died in the period up to June 1999 (i.e., a follow-up of some 5.5 years).

Differences between groups were tested with student's *t*-test and the Mann-Whitney nonparametric test. Logistic regression analysis was used to differentiate between groups. Survival analysis, including Cox regression, was also performed on the truncated data set. The computations were done on a Macintosh computer with the SPSS package.

RESULTS

There were 39 men and 22 women in the client group, and 31 (79.5%) men and 12 (54.5%) women stayed for the full program of 4 weeks. Female clients had shorter mean length of drug abuse than men, 13.9 vs 17.8 years. Mean age at entry was also significantly lower in women, 28.1 vs 33.0 years. Mean age at entry of the deceased was 32.2 and 31.0 of the rest of the clients (31.3 years for all, Table I).

Among the 61 clients traced through the public death register in June 1999, a group of 13 (21.3%) had died. There were 2 females and 11 males among the dead (Fig. 1). Mean time before death was 35.2 months ($SD = 23.6$). Three clients had emigrated to Denmark, and they were calculated as living. The results of the

³Scoring: Items 1-5 and 7 were scored on a 5-point scale: from 1 = very often to 5 = very seldom. Item 6 was scored on a 5-point scale: from 1 = almost all the time to 5 = never. Items 8 and 9 were scored on a 3-point scale: from 1 = no to 5 = yes.

Table I. Drug Addicts ($n = 61$) Followed-up for 5 Years According to Sex, Age at Entry, and Results of Two Psychometric Tests [Antonovsky's Sense of Coherence Test (SOC) and Hopkins Symptoms Checklist (HSCL-24)]

Group ^a	Sex (%)	Age mean	SOC mean (SD)	HSCL mean (SD)
Deceased ($N = 13$)				
Female	2 (3.3)	32.2	2.60 (0.7)	2.36 (0.7)
Male	11 (18.0)			
Alive at follow-up ($N = 48$)				
Female	20 (32.8)	31.0	3.09 (0.6) ^b	1.98 (0.5) ^c
Male	28 (45.9)			
All clients $N = 61$		31.3	2.98 (0.7)	2.06 (0.5)

^aSignificant difference between deceased and alive group.

^b $p = .04$.

^c $p = .02$.

detoxification and counseling stay according to completion and further results on the psychometric tests are published elsewhere (32).

Six clients who died had not completed the 4-week resident stay, whereas seven did complete their stay. Among the noncompleters, 11 of 17 were alive at the end of the observation period.

Logistic regression with the event of death as dependent variable showed that there was a 3.6 (1.2–10.7) increase in risk of dying in the observation period with

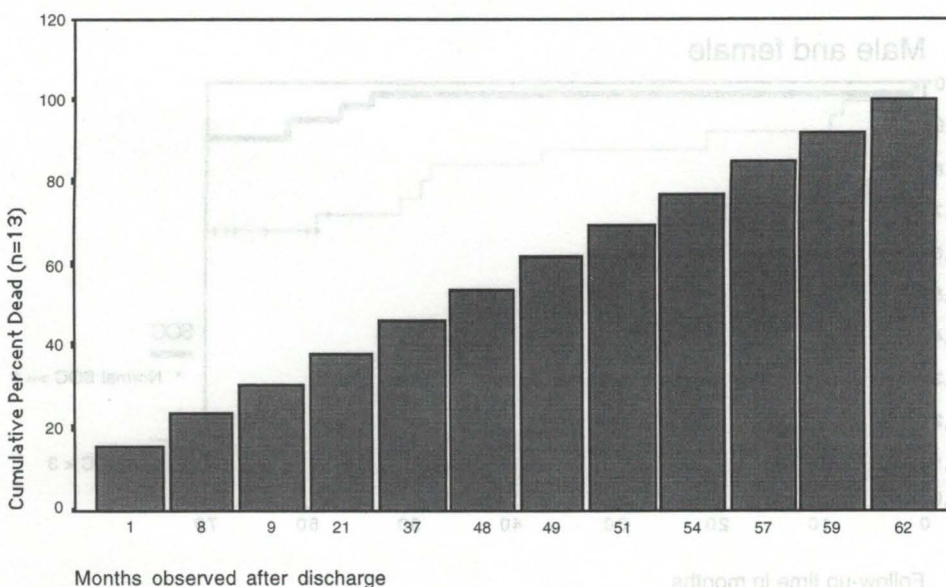


Fig. 1. Cumulative percentage of drug addicts ($n = 13$) dying in a five years observation period after a 4-week detoxification and counselling stay, n total = 61.

Table II. Cox Regression of Mortality According to Age, Sex, and Scores on Antonovsky's SOC Scale and Hopkins Symptom Checklist 5.5 Years after a Detoxification and Counseling Stay of Weeks for 61 Drug Addicts

Covariates	B	SE	Wald	p-value
Age	-0.03	0.07	0.02	NS
Sex	-1.91 ^a	0.89	4.59	$p < .01$
HSCL-24	0.30	0.78	0.14	NS
SOC	-1.30 ^b	0.57	5.25	$p < .01$

^aRelative risk: 0.85.

^bRelative risk: 0.73.

an SOC score reduction of 1.0 point. There was a similar increase in risk of dying according to a 1.0-point increase in HSCL score of 3.7 (1.1–12.5). Table II indicates nonsignificant coefficients by Cox regression of mortality according to age and scores on HSCL-24, whereas the coefficients are highly significant for sex and scores on SOC.

Figures 2 and 3 give the Kaplan–Meier plots of survival according to a division of the clients in groups with differing SOC scores. Mortality increases with decreasing scores on the SOC scale. The similar calculations for men and women separately indicate higher mortality in men with decreasing SOC value (figures not shown).

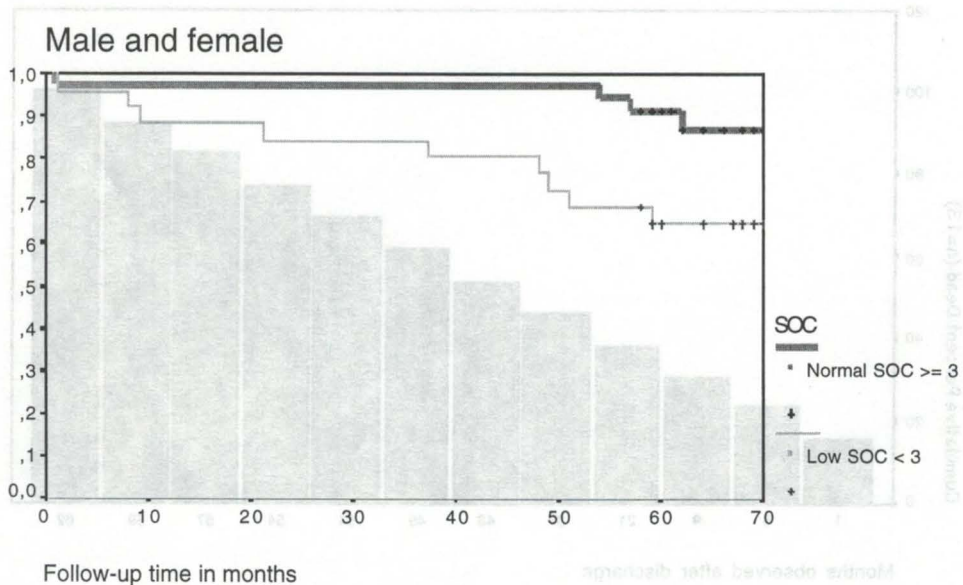


Fig. 2. Survival curves (Kaplan Meier plot) of 39 male and 22 female drug addicts according to imputed normal score or not on Antonovsky's Sense of Coherence test (SOC). Log rank test, $p = 0.0028$.

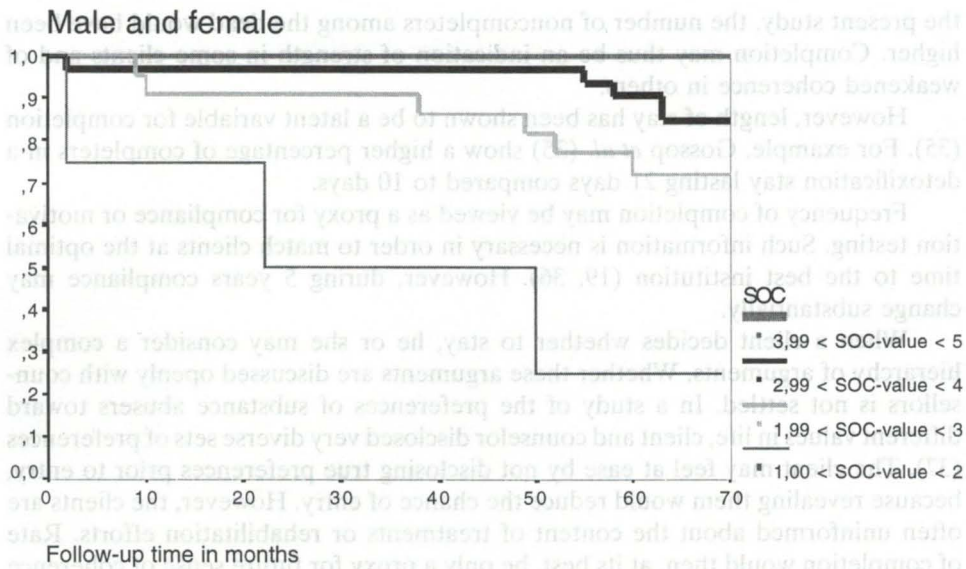


Fig. 3. Survival curves (Kaplan Meier plot) of 39 male and 22 female drug addicts according to four different scores on Antonovsky's Sense of Coherence test (SOC). Increasing score on SOC indicated increased rate of survival. Log rank test, $p = 0.009$.

DISCUSSION

Detoxification and consecutive counseling puts a strong pressure on the addicted client, either from staff or fellow clients within the detoxification unit or from outside the facility. Pressure on the client may have come from a spouse, other family members, the local network of abusing or nonabusing friends, or from helping institutions. The results of the present study are not only a consequence of the many factors present at the time of the resident stay, but also the after effect of up to 5.5 years of life events. Given the significantly higher mortality among the addicts rating below 3.0 on the SOC scale, a plethora of risk factors pertinent to the individual substance abuser (33) may be presumed. In a previous study of the same material (32) it was shown that there was also a significantly lower score on the SOC scale among noncompleters from the counseling unit compared to the completers. This result suggests that facilities should put more effort in following up these noncompleters in other settings for many years. Conversely, completion of a postdetoxification counseling stay indicates a reduced risk of dying in the following 5 years.

Completion of a therapeutic stay is generally taken as an indication of a willingness to change abusing activities. It may also be relevant to argue that leaving a facility that does not comply with the internal logic or rationality of the client could be rehabilitatively more effective than completing the counseling (34). This is partly corroborated by the finding that only 6 of 17 noncompleters died in the observation period. If posttreatment deaths happened only in noncompleters, in

the present study, the number of noncompleters among the dead would have been higher. Completion may thus be an indication of strength in some clients and of weakened coherence in others.

However, length of stay has been shown to be a latent variable for completion (35). For example, Gossop *et al.* (35) show a higher percentage of completers in a detoxification stay lasting 21 days compared to 10 days.

Frequency of completion may be viewed as a proxy for compliance or motivation testing. Such information is necessary in order to match clients at the optimal time to the best institution (19, 36). However, during 5 years compliance may change substantially.

When a client decides whether to stay, he or she may consider a complex hierarchy of arguments. Whether these arguments are discussed openly with counsellors is not settled. In a study of the preferences of substance abusers toward different values in life, client and counselor disclosed very diverse sets of preferences (37). The client may feel at ease by not disclosing true preferences prior to entry, because revealing them would reduce the chance of entry. However, the clients are often uninformed about the content of treatments or rehabilitation efforts. Rate of completion would then, at its best, be only a proxy for future sense of coherence and willingness to abstain from further drug abuse.

The HSCL-24 did not give as clear a picture as the SOC-13 test, although on logistic regression, an increase of 1 point on the HSCL-24 scale did significantly increase the risk of mortality after 5 years. A 1-point increase in HSCL-24 is, however, a more severe sign of deterioration than a 1-point decrease in the SOC-13 score. Severe psychiatric comorbidity is as likely to lead to further deterioration in functioning and more psychiatric treatment as to a more thorough motivation for change (32, 38–43). Thus, this scale may not be as good a guideline for future mortality as the SOC scale. The present study was performed in a clinical setting, where time was a scarce commodity. Other measures of coping exist, but they would have been more cumbersome to use. Also, the vast literature on psychiatric comorbidity could have shed some light on the persons at greatest risk. As the facility under study had no psychiatrically trained staff, this was not done. The rather disappointing results of the use of validated psychiatric instruments in Norway referred to previously contributed to our choice of simpler tests (26, 44).

The intent or preferences of the client are probably so complex that neither the client nor the counselor could keep track of them easily. Our finding of a strong relationship between an easy-to-perform questionnaire and later mortality outcome would be encouraging in allocating financial resources for treatments that augment the sense of coherence of clients, and thus would give a better mortality outcome. The rise in sense of coherence could be easy to measure, as shown in the present paper.

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