Misdiagnosis in Rehabilitation Settings with the Hearing Impaired Client

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WITH THE HEARING IMPAIRED CLIENT

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Misdiagnosis in rehabilitation settings is an area of much concern because of the devastating effect that it may have upon the client and the process. Little has been done, however, to investigate this problem in terms of its frequency or nature. Because of the inherent communication problems with hearing impaired individuals, the misdiagnosis problem may be exaggerated when working with this population. This study was designed to investigate the frequency of misdiagnosis in rehabilitation and counseling settings with hearing impaired clients in Tuscon, Arizona.

For this study, misdiagnosis refers to the erroneous original assessment of a client as outlined on the agency's intake form. This was determined by evaluating the client's competence to perform in the originally prescribed programs of rehabilitation. It was further determined whether the misdiagnosis was too high or too low. That is to say, did the client function at a higher or lower level than was originally assessed?

Misdiagnosis is by no means unique to the rehabilitation field and in the literature several reasons are postulated for its occurrence. In a study of cancer patients, Pinkerton and McAleer (1976) found that health care professionals are unrealistically pessimistic about cancer. This results in "counselors behaving less favorably in projected case performance toward persons with cancer than toward persons with other chronic disabilities, and

counselors will tend to provide less case services to persons with cancer than to persons with other chronic disabilities" (p. 575).

Heilburn (1974) also addressed this issue as it relates to the health care field. He stated that there are pressing reasons why research for better counseling prediction methods should be pursued with more vigor. "From a practical point of view, increased emphasis on cost accounting in the delivery of health care services, must eventually lead to questioning the loss of clients to whom psychological services are offered but for whom the opportunity is wasted because they fail to maintain their environment" (p. 634).

In an area more related to rehabilitation, Boyer's (1970) dissertation attempted to determine whether those rehabilitation counselors who followed the diagnostic report's vocational recommendations were better able to 'close' their clients in employment than counselors who did not follow the recommendations. He concluded, "Psychological and prevocational evaluations were considered important sources of information to the counselor and when he followed the vocational recommendations he significantly more often closed his client as rehabilitated. In those cases not rehabilitated, there was no definite behavior pattern as to whether the counselor followed or did not follow the diagnostic report's vocational recommendations" (p. 9).

Some research done by Greever (1977)

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suggests that counselor bias may be a possible reason for misdiagnosis. She explains: "A large percentage of vocational rehabilitation clients are from low income groups. Negative counselor attitudes toward these groups could reduce the effectiveness of vocational rehabilitation services and possibly increase the likelihood that some clients will not successfully complete their rehabilitation program" (p. 139).

Very little has been done regarding misdiagnosis with a deaf client population. However, an article by Jeter (1976), even though she was not studying misdiagnosis, points to the potential seriousness of this matter. She found in a nationwide study of 221 psychiatric patients who had been hospitalized from 1 to 52 years (with a mean state of 13.5 years), 46.6% had a hearing loss of at least 25 dB. In addition, 27.6% of the sample had a significant sensorineural hearing loss. To relate this data to the diagnosis problem, it might make one suspect that some of the patients were in need of services as deaf persons rather than psychiatric services.

The question posed by the research which follows has not been previously asked with regard to the hearing impaired client, nor does the literature address itself to this problem specifically. As a result, the researchers felt that it would be presumptous to hypothesize an expected outcome without adequate information upon which to base an hypothesis. Instead, this project was designed to sample what is happening in terms of the diagnoses of hearing impaired clients.

METHOD

Subjects:

Seven counselors who work with hearing impaired clients in various rehabilitation settings in Tucson, Arizona were chosen as the subjects for this study. Two of the counselors worked with the Department of Vocational Rehabilitation, one with the Community Outreach Program for the deaf (a community service agency for hearing impaired persons), one with Goodwill Industries, one with the Model Demonstration Program at the University of Arizona, one with Beacon Foundation, and one with the Independent Living and Training Program (a halfway house for young adult deaf persons). All seven counselors had been working wth their clients for a minimum of six months.

Instruments:

An information sheet, which was accompanied with instructions, was given to each of the counselors to record the reevaluation information. Spaces were provided on the information sheet for the counselors to indicate, on a four-point scale, the degree of agreement with their original diagnosis ranging from "Strongly Agree" to "Strongly Disagree".

The obvious threat to validity associated with the use of this instrument is the integrity of the individual counselors. However, they were all assured that the individual information sheets would be kept strictly confidential so there should have been nothing to gain or lose personally.

Procedure:

Each counselor was contacted and asked if he/she would be willing to participate in a research project involving rehabilitation diagnosis. If they agreed, an appointment was made to briefly explain the nature of the research, give them the instruction and information sheets, and answer any questions they might have. They were asked to pull five of their hearing impaired clients' files at random and reevaluate the original diagnosis. They were then instructed to mark the appropriate box indicating their present degree of agreement with that diagnosis. If they disagreed or strongly disagreed, they were asked to indicate whether they now believed the original diagnosis to be too high or too low for the client. They were each given approximately a week to finish this process. For more complete details regarding the instructions, please contact the authors.

Limitations:

The primary limitation that the researchers are aware of is a statistical one. Because a counselor and a client should never knowingly

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agree to a rehabilitation plan that is too difficult for the client to perform in successfully, we should not have any clients originally diagnosed as being incompetent. Instead, the requirements for the clients' success in the given rehabilitation program would simply be reduced. However, in order to run the kappa statistics, the reevaluation agreements with the original diagnoses were divided evenly and placed in the appropriate cells "A" and "D" of the decision matrix.

RESULTS

The mean level of reevaluation agreement with the original diagnosis was 65.7% with a range of 40% agreement by two counselors to 100% agreement by one counselor. 22.8% of the reevaluations indicated that the counselors now believe that the original diagnosis was too high and 11.4% of the original diagnoses were reevaluated as being too low.

Table I shows the number of original diagnosis/reevaluation agreements, the number of original diagnoses that were reevaluated as being too high or too low.

TABLE I
REEVALUATIONS OF
ORIGINAL DIAGNOSES

Subjects	Agree	Disagree High	Disagree Low
1	3	2	0
2	4	1	0
3	3	1	1
4	2	3	0
5	4	0	1
6	2	1	2
7	5	0	0
	23	8	4

The information from Table I was then compiled and expressed as proportions on a decision matrix, with the proportion of original diagnosis/reevaluation agreements divided evenly and placed in cells "A" and "D".

	Original Assessment		Totals
	competent	not competent	
competent	.329	.114	.443
not competent	.228	.328	.556
Totals	.557	.442	

Cohen's (1960) kappa statistic (K) formulas were then applied to the data contained in the decision matrix in order to measure the degree of agreement uncontaminated by chance.

The statistical procedures employed are described below:

First, kappa was figured using the formula,

$$K = \frac{Po - Pc}{1 - Pc}$$

where Po = cells (A + D)
and Pc = (a + b) (a + c) + (c + d) (b + d)

For this data K = .326

Second, the maximum value of kappa (K max) was figured by (a) adjusting the cell values in the decision matrix to reflect the maximum possible number of agreements consistent with the observed marginal proportions and (b) calculating K using these adjusted values.

	Original Assessment		Totals
	competent	not competent	
competent	.443	0	.443
not competent	.114	.442	.556
Totals	.557	.442	

For this data K max = .773

Third, kappa is corrected by dividing kappa by the maximum possible value for kappa.

$$\frac{K}{K\ max} = \frac{.326}{.773} = .422$$

This may be interpreted as meaning there is uncontaminated by chance, a 42.2% agreement rate between the original diagnosis and the reevaluation of the clients. The reverse would be that 23.5% of the 65.7% agreement could be by chance. These figures would indicate that there is an appreciable degree of diagnosis inconsistency.

The Tukey HSD statistic (Dinham, 1976) was also run on the data in Table I and the resulting HSD (Honestly Significant Difference) = 1.77, with d.f. = 3, 18 and ds.01. According to this statistic there is a significant difference between groups when the sample mean differences equal or exceed 1.77. As a

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result it can be seen that there is a significant difference between the agreement group and the high original diagnosis group, as well as, the agreement group and the low original diagnosis group. However, there is no significant difference between the high and the low original diagnosis groups. We may interpret this to mean that there is no clear cut trend as to the directionality of the misdiagnosis.

DISCUSSION

From these results several items should be noted. First, and most obvious, this study indicates a considerable amount of misdiagnosis with hearing impaired clients in various rehabilitation settings. Whether the inconsistency is a function of the deaf client or some other factor inherent in diagnosis is not clear. This could be determined by investigating the diagnoses of several different client populations in rehabilitation settings and comparing the results of the different populations. If, in fact, there are more diagnosis problems with deaf than with other populations of rehabilitation clients, further investigation should be done to determine why that is the case.

Another interesting area is that there were twice as many original diagnoses that were reevaluated as being too high than were reevaluated as being too low. However, because the sample size was not large enough, a significant difference between these two diagnoses could not be established.

This study should be replicated with a larger sample to determine conclusively whether there is a trend in the direction of misdiagnosis. If there is a trend, further research to determine why the trend exists should be conducted.

It should be noted that there is no guarantee that the reevaluations are any more accurate than the original diagnoses. A long range study to determine the effectiveness of the rehabilitation program for the client after closure should also shed some light on the diagnosis question. In order to properly evaluate diagnoses by this method, it will also be necessary to include clients who were closed in 'Status 08' because it was determined that Vocational Rehabilitation services could not reasonably be expected to benefit the individual in terms of employability. For example, if a person is closed for that reason and then is found to be gainfully employed upon reevaluation, the probability of an original misdiagnosis would be very high.

SUMMARY

This study was designed to estimate the frequency of misdiagnosis in rehabilitation and counseling settings with hearing impaired clients. Seven counselors in six different rehabilitation agencies were asked to reevaluate the original diagnosis on five randomly selected clients. It was found that 65.7% of the reevaluations agreed with the original diagnosis, 22.8% of the reevaluations indicated that the original diagnosis was too high, and 11.4% of the reevaluations indicated that the original diagnosis was too low. The kappa (corrected) statistic indicated that there was, uncontaminated by chance, a 42.2% agreement rate between the original diagnosis and the reevaluation of the clients. Further, the Tukey HSD statistic indicated that there was a significant difference between the agreement group and the high original diagnosis group, as well as the agreement group and the low original diagnosis group. However, there was no significant difference between the high and low original diagnosis groups. These results indicate the potential need for future research in several areas.

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REFERENCES

1. Boyer, Clayton Leon, *Rehabilitation Counselor Vocational Decisions and Diagnostic Report Recommendations,* The University of Arizona; 1970, pp. 8-10.

2. Dinham, Sarah M., *Exploring Statistics: An Introduction for Psychology and Education,* California: Brooks/Cole, 1976.

3. Greever, Kathryn B., "A Study of Rehabilitation Counselors: Laws of Control and Attitudes Toward the Poor", *Journal of Counseling Psychology,* March 1974, Vol. 24(2), pp. 137-141.

4. Halburn, Alfred B., Jr., "Improved Detection of the Early Defecting Counseling Client", *Journal of Consulting and Clinical Psychology,* October 1974, Vol. 42(5), pp. 633-638.

5. Jeter, Irma J., "Unidentified Hearing Impairment among Psychiatric Patients", *Journal of the American Speech and Hearing Association,* December 1976.

6. Martuza, Victor R., *Applying Norm-Referenced and Criterion-Referenced Measurement in Education,* Boston: Allyn and Bacon, Inc., 1977.

7. Pinkerton, Susan S. and McAleer, Charles A., "Influence of Client Diagnosis; Cancer; on Counselor Decisions", *Journal of Counseling Psychology,* November 1976, Vol. 23(6), pp. 575-578.