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Emotional Disturbances Expressed by Deaf Patients: Affective Deaf Syndrome

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Abstract

Structured assessment of affective mood and mental distress in deaf and hard-of-hearing individuals is difficult for various reasons. The aim of this paper is to examine the complex interaction between self-rated affective mood as well as the combined double burden of affective psychiatric disorders and deafness/hard-of-hearing, this interaction system has been termed the Affective Deaf Syndrome. Deaf and hard-of-hearing psychiatric polyclinic patients at a University Hospital in Sweden (n=52) were compared to healthy individuals (n=116). The Positive Affect and Negative Affect Scale, Rosenberg's Self-esteem Scale, the Stress and Energy questionnaire and a Background & Health Questionnaire were used. Our results clarified some issues of the emotional disturbances among the patient group with the following results. Firstly, the communication between family members was hindered due to a high rate of non-fluent sign communication (86%) within the families of the patients. Only few (10%) of the patients were found to have fluent Swedish language skills. Secondly, self-esteem was found to predict positive affective mood for patients ($p<.01$) and for controls ($p<.001$) although the patients had less self-esteem. Positive self-esteem is identified as a protective factor. Thirdly, ANOVA results indicated significant differences between patients and the healthy control group in self-rated stress ($p<.001$), analgesics ($p<.001$) and self-rated energy ($p<.001$). The conclusions from regression analyses of the patient group were that analgesics may be seen as a predisposing factor for the Affective Deaf Syndrome (ADS) and was identified as a key attribute for the patients at risk. Stress was positively related to sleep disturbance and analgesics. Further, suggestions on how to enhance the treatment quality of the patient group are presented.

Keywords: Affective mood; Affective deaf syndrome; Deaf and hard-of-hearing; Psychiatric diagnoses; Self-esteem; Energy; Stress; Analgesics

Emotional Disturbances Expressed by Deaf Patients: Affective Deaf Syndrome

Deafness and hard-of-hearing is not only a problem of hearing loss. Although deaf patients enter psychological and psychiatric treatment with the same disorders as hearing patients, there are special circumstances that are created by their cultural background and position in society [1-3]. The fact that the Deaf and hard-of-hearing have communication problems with family and society, because of not being able to communicate with the dominant language of the society, may lead to isolation and further contribute to the heavy burden of the disability. Sign language interpreters in mental health settings face extreme linguistic and cultural difficulties in interpreting basic everyday language. This difficulty is even greater when it comes to interpreting in mental health settings. For special issues and concerns see e.g. [4].

The interrelationship between chronic physical illness, depression or depressive symptoms has been associated with individuals' cognitive-emotional behavioral profiles that are linked to sets of psychosocial resources determining health outcomes [5-9]. Depression is characterized by low levels of self-esteem, low levels and/or unstable self-esteem may offer an enduring vulnerability factor for depression [10-15]. Stress and/or stressful situations may accompany many aspects of an individual's everyday life. Stress influences individual's psychological and physical health negatively [16]. Individuals' experience of stress are highly subjective with some individuals experiencing more predispositions than others to appraise situations as threatening or problematic, thereby at risk for psychosomatic ill-health, including cognitive difficulties and sleep problems [17]. This paper examines key issues for the combined mental distress of hearing disability, psychiatric disorders and affective mood.

Affective mood depends on both positive affect (PA) as well as negative affect (NA). Both PA and NA may possess explanatory value despite these scales being correlated with different factors [18]. The two dimensions are also measures of anxiety and depression – anxiety is a state of high NA whereas depression is a mixed state of high NA and low PA [19]. PA and NA not only express temperamental dispositions but are also complementary to extraversion and neuroticism [20]. It appears that both PA and NA influence individuals' relations to stressors, situations associated with stress and the experience of stress [21,22]. It is possible that the 'affective profile' of individuals predisposes them to confront stressful situations with different propensities.

Affective personality self-reported data concerning stress may be associated with affective states [23]. Most studies use PA and NA to define emotional state rather than a 'trait like' temperament [24]. It has been found repeatedly that NA reflects expressions of affect, such as anger, contempt, guilt, shame, fear and depressiveness, that appear to present relatively stable personality characteristics [25-27] whereas PA expresses enthusiasm, activity, control and feelings of duty, associated with a positive attitude, both over time and varying

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circumstance [28,29]. Individuals characterized by high levels of PA experience a greater appreciation of life, more security, generally show more self-confidence [30,31], more social relations and assertiveness, greater satisfaction of friends, and are often described as passionate, happy, energetic and alert [32,33]. On the other hand, those individuals characterized by NA experience greater stress, anxiety and strain under a wide range of circumstances and events of which they experience limited, if any, control. Currently, the concept of affective personality has been replaced by the more applicable notion of affective profiles [34]. There has been observed quite regularly from data not including psychiatric patients that stress could be predicted from negative affect [35-38].

The present study built on our earlier studies of affective mood, stress and self-esteem at the Psychological Institution at Göteborg University and Sahlgrenska University Hospital on affective personality. It includes psychiatrically ill patients who fulfilled the psychiatric diagnostic criteria (DSM IV-R and ICD-10) for major depressive disorder 54%, anxiety disorder 37% and a mixed group 9% including bulimia nervosa, polymorph psychosis and Attention Deficit/Hyperactivity disorder (ADHD). Eighty-three % of the patients also fulfilled the criteria for personality disorder with mainly borderline diagnoses according to DIP-Q [39]. The study clearly indicated that patients who have had a psychiatric diagnosis differ from healthy controls with regard to PA, NA, depression, compulsion, anxiety and personality traits (DIP-Q), as well as stress, energy, and optimism. The patient group expressed lower PA, energy, and optimism compared to healthy controls. The clinical implications of the findings indicate clear associations between stress, affect, and mood state despite the modulation through pharmacotherapeutic agents. The disadvantage is more serious in the patient group. These findings are consistent with those obtained in earlier studies wherein patients presenting Neurofibromatosis type 1 together with dysthymia/depression at a similar level of severity were investigated . Mood states and affect are associated with serotonergic systems [40-42]. This renders it understandable that the findings in the two groups are similar.

In order to treat the patients, it is important to be able to predict stressful situations. The ability of predicting stress both in male and female psychiatric patients as well as in healthy volunteers was studied [40]. The results indicated that stress could be predicted from negative affect and counter-predicted by positive affect. A conclusive gender effect was found in the control group and pertained to anxiety where the female participants evidenced more than twice as much anxiety as the males. Independent of gender, patients otherwise showed markedly greater negative affect and anxiety than the healthy control group, as well as markedly lower levels of positive affect and optimism.

Considerable evidence suggests that self-esteem may influence individuals' perceptions and cognitive appraisals of and responses to a multitude of events and situations, such as occupation, examinations, illness, stress, chronic pain etc. [47-53]. Self-esteem may be crucial to ensuring psychosocial well-being through the modulation of personal aspirations, goals, motives and social interactions [54]. It has been linked to better adjustment, lower depression, and less helplessness in individuals presenting a variety of health problems [55-57]. Individuals expressing high levels of self-esteem seem to possess both belief and expectancy regarding their own merits, abilities, strengths and competence [58-60]. In inregard to this, optimism has been shown to be an intrapersonal resource that may counteract the impact of negative events linked to lower levels of depression, greater well-being, more health benefits and positive outcome over a wide range of studies [61-65]. Individuals with optimistic expectancies express positive outlooks, even under difficult circumstances [66], and they possess numerous active coping strategies [67-70]. Earlier studies of affective mood and psychiatric illness including patients with deafness and /or hard-of-hearing have reported conflicting results. For example [71] reported that among deaf psychiatric ill persons as much as 50% of the precipitant causes of the patients revolved around early traumatic physical injuries, operations, or fear of separation from significant relationships. In what they termed "traumatic injury," Grinker et al. noted that 21 % of patients displayed disturbed behavior. In a more recent study [72] showed a broader range of diagnoses than in past studies, with posttraumatic stress disorder being the most common diagnosis. Compared with hearing patients, the deaf patients were less likely to be diagnosed with a psychotic or substance abuse or disorder and more likely to be diagnosed with a mood, anxiety, personality, or developmental disorder. An important finding [72] was that 75% of deaf individuals fell into the non-fluent range of communication in American Sign Language. Mood disorders and substance abuse were diagnosed infrequently in past research and traumata and their sequelae have earlier hardly been addressed at all [73]. Only in recent years, have special psychiatric units with staff trained in the use of sign language contributed to research on the deaf and hard-of hearing, this might be a reason for divergent results from earlier studies. The sign language being a different kind of language, using pictures and not words, cannot be translated into spoken language without problems. This specific problem is well known in the deaf culture and must be taken into account [74].

Aims of the Study

This study aims to investigate emotional disturbances by deaf and hard-of-hearing patients as expressed in the Affective Deaf Syndrome. This syndrome consists of complex interactions of communication, affective mood and psychiatric disturbances. The present study has three aims. The first aim is to clarify the level of communication problems. The second aim is to study the differences in affective mood between a patient group with deaf/hard-or-hearing patients and a healthy control group. The third aim is to identify predisposing and protective factors in the patient group by identifying key attributes for the identification of patients at risk.

Method

Participants and procedures

Psychiatric patients with severe hearing impairment and deafness were recruited from the University Hospital in Gothenburg. The diagnostic assessments were all performed by a psychiatrist assigned to the Deaf Unit. The specialist team consisted of a psychiatric consultant, a psychologist, an occupational therapist, a social counselor and a specialist nurse and it has many years of established expertise in clinical treatment of deaf people. The team all worked with interpreters using the Swedish Sign Language (SSL), who usually served at the clinical team specializing in psychiatric care of deaf people and thus were familiar with the patients and the complex issues and concerns in interpreting in mental health settings. The procedure could vary from patient to patient where most of the patients needing more than one session to fill in the questionnaires. There was a problem presenting the questions in a way that was understood by patients not knowing the Swedish language and only having rudimentary knowledge by the SSL. The patients had the possibility to use text message if they had any further questions or wanted to interrupt the participation for the procedure of the study. Patients with severe mental retardations were excluded from the study. Except for two patients all the patients were willing to take part in the study. The data were collected during a 12-month period from August

2014 until August 2015. The group consisted of 52 patients, 33 deaf and 19 hard-of-hearing (including a few relatives who also received treatment at the unit), the group consisted of 10 men and 42 women with a mean age of 42.63 years (*SD* = 12.74; *range* = 21-71). Psychiatric diagnostic system used was (*DSM-5* and *ICD-11*).

A healthy control group was recruited from the same socio-economic area as the patients. The healthy volunteers were not paid for their participation. The group had to sign an agreement of participation and that they had received information that they could stop the participation of the study at any moment. The number of healthy controls were 116 participants, 41 men and 75 women, with a mean age of 46.48 years (*SD* = 13.76; range 19 – 75). Each participant was asked to complete a battery of psychometric test instrument as well as a Background and Health Questionnaire.

Ethical considerations

The ethics protocol of Sahlgrenska University Hospital, Gothenburg was applied and maintained. The patients were in their habitual psychiatric state. Most had been treated by medication and psychotherapy for some period before the study. Their hearing loss ranged from very severe to total loss of hearing. The SSL was used when needed and was offered by trained translators who also outside the study helped the same patients with interpretation.

Assessment tools

A Background and Health Questionnaire including age, gender, partnership, number of children and age of children, years of education after the obligatory nine year education, smoking and drinking habits, pain, sleeping problems, physical exercise, television hours/day, percentage of sedentary work, self-evaluation of general health, use of mood-enhancing drugs and analgesics, length, weight and waist measurement were completed according to the description and procedure outlined in[82].

The *DSM-5* (American Psychiatric Association diagnostic and Statistical Manual of Mental Disorders, 2013) [78] is the standard classification system of mental health disorders used by professionals for research in Sweden and the International Classification of Diseases Revision 11 (ICD 11), system is used in clinical praxis in Sweden were applied in the study.

Positive Affect Negative and Affect Scale (PANAS)

The instrument provides a self-estimation of "affect", both positive and negative. It consists of 10 adjectives for the Negative Affect (NA) dimension (Negative affect: Cronbach's α = .83) and 10 adjectives for the Positive Affect (PA) dimension (Positive affect: Cronbach's α = .88). The adjectives describe feelings (affect) according to Watson [26] Respondents give their estimates on a 5-point scale (from "not at all" to "very much"). The 10-item positive affect scale includes adjectives such as strong, proud, and interested. The 10-item negative affect scale includes adjectives as afraid, ashamed, and nervous. Others [90] have shown that there does not exist any significant correlation between the extent of positive and negative effectiveness, which implies that a 'divergent validity' appears to be the case. Currently, the notion of affective profiles has been applied to describe participants' expression of mood state [75-77, 79-80]. The internal consistency for Negative affect was = .88 (Chronbach's α), Positive affect = .88. Affective mood defined as (Positive affect/ Negative affect) *100 = .88 (Chronbach's α).

Stress and Energy (SE)

The instrument is a self-estimation scale that assesses individual's experience of their own stress and energy. The test is divided into two sub-scales that express each participant's level of mood in the two dimensions: "experienced stress" and "experienced energy". Response alternatives are ordered within six-graded scales that extend from 0 = not at all to 5 = very much. The instrument has been validated through studies concerning occupational burdens and pressures [81-85]. The SE-scale has been constructed from the earlier used checklist, Mood Adjective Check-List which was modified by [86-89] reduced the list to 12 adjectives in the two dimensions, stress and energy, which provides the latest version applied here. The internal consistency was found to be stress = .90 (Chronbach's α) and energy = .75 (Chronbach's α).

Rosenberg's Self-esteem Scale (SES)

The Self Esteem Scale is comprised of 10 items where each item is rated on a five-point scale form 0 (does not agree) to 5 (completely agrees). This scale is constructed after the Tennessee Self Concept Scale. The SES instrument is a self-estimation, 10-item questionnaire which has been constructed to measure the extent to which individuals consider themselves "sufficiently functional", particularly in adolescents and young adults. Self-esteem is measured using ten items (statements, each item rated on a four point Likert scale) concerned with feelings about oneself and one's attitude towards one's resources, relations to others and achievements, whereby half of the statements express positive aspects about self and half express negative aspects. The participants were required to respond with the number that they considered to fit the degree to which they agreed with the statement or disagreed with the statement, whereby 1 = "agree completely" and 4 =" disagree completely". For example, statements like "I can do things as well as anybody else", or "I wish that I had more respect for myself", or "On the whole I am satisfied with myself". The reliability of the test was described to be .86 and it was only weakly correlated with age, education, and general intellectual performance (Fits WHO. Manual. Tennessee Self Concept Scale. Nashville (Tenn.): Counselor Recording and Tests, 1965). The internal consistency in our study was .85 (Chronbach's α).

Statistical Analyses

Data were analyzed using SPSS version 20 software. Pillai's Multivariate Analysis of Variance (MANOVA) was applied with type of group and gender as independent variables and with stress, energy, and number of cigarettes/day, pain, analgesics, television, self-esteem and affective mood as dependent variables, a correlation analysis was performed and one-way ANOVA was performed likewise. A linear regression analysis was performed to examine to which extent affective mood may be predicted from the dependent variables. A nonparametric chi-square was carried out to compare the patient population and the healthy controls to compare the patient population and the controls with regard to the dependent variables.

Results

Psychiatric diagnostic system used was (*DSM-5* and *ICD-11*). The patients fulfilled the criterion for the following psychiatric conditions: Depressive disorders (F32 and F33; DSM 296) = 43%, Anxiety disorders F 41, DSM 300) = 33%, Trauma- and Stressor-Related disorders (F43; DSM 308, DSM 309) = 33%, Attention-Deficit/Hyperactivity disorder (F90; DSM 314) = 21,4 %, Obsession-Compulsive disorder 300.3 (F42) = 12 %, Schizotypal Personality disorder (F21, F22; DSM 301., DSM 297) = 7%, Autism Spectrum Disorder (F84; DSM 299) was observed in our material in 21% of the patient group. Personality disorder Cluster

B = 5%, Substance-Related and Addictive disorders (F10; 303.00) = 5%. Forty-two % of the patients (Table 1) fulfilled more than one diagnosis. Most common was the combination of Depressive disorder combined with Anxiety disorder and/or Trauma-and Stressor-Related disorders.

Most of the patients 86 % had no deaf parent, and 74% of the patients had no deaf siblings or relatives. Ten % of the deaf patients were found to have fluent Swedish language skills. Adding to this problem, only 14 % of family communication was with fluent sign and most of family communication-was with speech, writing, and gesture, and 12 % with some sign. Support may also be difficult to give from the side of the family because as many as 42% of the patients fulfilled at least two psychiatric diagnoses. *Type of deafness*: deaf = 63,5 %, and hard-of-hearing = 36,5%. *Etiology of deafness*: unknown = 38,0%, hereditary = 30,9%, Rubella = 16,7%, Meningitis = 2,4%, prematurity = 2,4%, infection = 4,8% and other = 4,8 %. *Hearing status of parents*: none deaf parents = 85,7%, one deaf 4,8 = % and two deaf parents = 9,5 %. *Hearing status of siblings and relatives*: one deaf = 4,8 % and more than one deaf = 21,4 %. *Family communications*: Speech, writing, and gesture = 73,8 %, some sign = 11,9 % and fluent sign = 14,3%.

Pillai's multivariate analysis of variance (MANOVA) (2x2 factorial design) was applied. One way analyses of variance (ANOVAs) indicated that there was a significant influence of psychiatric disease (for patients and controls) on PA, NA, self-esteem, energy, stress, number of cigarettes/day, pain, analgesics, hours of television, and Affective Mood. Table 2 provides the results of the ANOVAs showing means, and standard deviations of the different items for patients and controls.

Table 3 provides the results of correlation analyses (Pearsons' r) performed between positive affect, negative affect, self-esteem, energy, stress, number of cigarettes/day, sleep, physical activity, analgesics, pain and hours of television/day. *Positive affect* produced significant positive correlations with self-esteem and energy, and a significant negative correlation with stress and pain. *Negative affect* produced significant negative correlations with self-esteem and energy but significant positive significance with sleeping problems and analgesics. *Self-esteem* produced positive significant correlations with energy and significant negative correlations with stress and sleeping problems. *Energy* produced negative significant correlation with sleeping problems and pain. *Stress* produced positive significant correlations with sleeping problems and analgesics. *Sleeping problems* produced significant negative correlation with hours of television. *Analgesics* produced significant positive correlation with pain.

Regression analysis

Patient group (Table 4). In order to assess the extent to which affective mood may predict the result outcome pertaining to the variables estimated in self-evaluation, analgesics, hours of television/day, pain, problems of sleep, stress and energy, a regression analysis was performed with each of the former as independent variables and affective mood as dependent variable. The analysis indicated that affective mood (F (8, 43) = 6.68, p<0.001, *adj.* R^2 = 0.47) could be predicted from high self-evaluation whereas analgesics were counter-predictive for affective mood.

Healthy volunteers (Table 5). In order to assess the extent to which affective mood may predict the result outcome to the variables estimated in Self-esteem, analgesics, hours of television/day, pain, problems of sleep, stress and energy, a regression analysis was performed with each of the former as independent variables and affective mood as dependent variable. The analysis indicated that affective mood (F (8, 107) = 22.70, p<0.001, *adj.* R^2 = 0.60) could be predicted from high Self-esteem and energy whereas stress was counter-predictive for affective mood.

	Patients		Healthy Controls	
	Men (n=10)	**Women (n=42)**	**Men (n=41)**	**Women (n=75)**
Stress [$F_{(3,165)}$=7.53, p<0.001]	2.00 ± 1.25	2.68 ± 1.10 A***	1.62 ± 0.84 C***	1.84 ± 1.19
Energy [$F_{(3,165)}$=11.46, p<0.001]	2.70 ± 0.85 F**	2.78 ± 0.80 A***	2.99 ± 0.89	3.55 ± 0.70 E**
Cigarettes [$F_{(3,165)}$=2.39 ns	3.70 ± 5.56	1.79 ± 4.18	0.71 ± 2.36	0.89 ± 3.54
Pain [$F_{(3,165)}$=5.22, p<0.01]	3.00 ± 1.16	3.57 ± 1.21 B**	2.66 ± 1.35 D**	2.68 ± 1.25
Analgesics [$F_{(3,165)}$=7.86, p<0.001]	2.00 ± 1.06	2.50 ± 1.40 B**	1.46 ± 0.90 C***	1.81 ± 0.88
Television [$F_{(3,165)}$=7.00, p<0.001]	2.40 ± 1.27	2.40 ± 1.21 B**	3.17 ± 0.86 D**	3.13 ± 0.08
Self-esteem [$F_{(3,165)}$=14.20, p<0.001]	2.76 ± 0.61 G*	2.63 ± 0.62 A***	3.20 ± 0.48 C***	3.23 ± 0.46
Affective mood [$F_{(3,165)}$=15.68, p<0.001]	155.05 ± 50.63	129.35 ± 53.30 A***	210.95 ± 64.65 C***	215.02 ± 78.21

Table 1: Descriptive Statistics for Patients and Control Groups distributed in relation to Gender. Means and SD (±) Self-reported stress, energy, number of cigarettes/day, pain, use of analgesics, number of hours of television/day, self-esteem and affective Mood. Pillai's Trace. Between male and female groups significances **p<0.01, ***p<0.001, ns = non-significant
A*** p<0.001 between female patients and female controls, B*** p<0.01 between female patients and female controls, C *** p<0.001 between male controls and female patients, D** p<0.01 between male controls and female patients, E** p<0.01 between female and male controls, F** p<0.01 between male patients and female controls, G* p<0.05 between male patients and female controls.

Measure		**Patients M/SD (n = 52)**	**Controls M/SD (n = 116)**
Positive Affect	[F(1,167) = 10.55, p<0.01]	3.08 ± 0.76	3.41 ± 0.52
Negative Affect	[F(1,167) = 43.82, p<0.001]	2.55 ± 0.86	1.79 ± 0.59
Self-esteem	[F(1,167) = 42.34, p<0.001]	2.66 ± 0.61	3.22 ± 0.46
Energy	[F(1,167) = 19.06, p<0.001]	2.76 ± 0.80	3.35 ± 0.82
Stress	[F(1,167) = 18.14, p<0.001]	2.55 ± 1.15	1.77 ± 1.08
Cigarettes	[F(1,167) = 4.83, p<0.05]	2.15 ± 4.48	0.83 ± 3.16
Pain	[F(1,167) = 14.03, p<0.001]	3.46 ± 1.21	2.67 ± 1.28
Analgesics	[F(1,167) = 16.40, p<0.001]	2.40 ± 1.35	1.69 ± 0.90
Television Self-esteem	[F(1,167) = 21.21, p<0.001] [F(1,167) = 42.34, p<0.001]	2.40 ± 1.21 2.66 ± 0.61	3.15 ± 0.84 3.21 ± 0.46
Affective Mood	[F(1,167) = 44.88, p<0.001]	134.29 ± 53.30	210.40 ± 73.69

Table 2: ANOVA Results and Descriptive Statistics for Patients and Control Groups.

Discussion

The primary aim of the current study was to investigate affective mood in deaf and hard-or hearing psychiatric patients at an out-patient unit at the University Hospital Sahlgrenska, in Gothenburg, Sweden and in a healthy control group. The aim was first to clarify the level of communication problems within of patient group. The second aim was to study the affective mood in the two groups and to compare differences. The third aim dealt with further studies of the patient group. We aimed at clarifying the complex interaction of self-rated affective mood and the double burden of psychiatric illness diagnosed together with deafness or severely hearing loss. On the basis of regression analyses, we intended to identify predisposing and protective factors. This aim included identifying key attributes for the identification of patients at risk. The hope was to find ways to help patients to overcome the affective problems they meet by applying the results in clinical

Variables	PA	NA	SES	Energy	Stress	Cig.	Sleep	Ph. A.	Analg.	Pain	TV
PA	1.00										
NA	-0.12	1.00									
SES	0.44**	-0.51**	1.00								
Energ.	0.57**	-0.32*	0.53**	1.00							
Stress	-0.39**	0.26	-0.45**	-0.22	1.00						
Cig.	0.05	-0.16	0.27	-0.08	-0.25	1.00					
Sleep	-0.12	0.32*	-0.40**	-0.28*	0.29*	-0.1	1.00				
Ph. A.	0.02	0.11	-0.25	-0.14	0.25	0.10	-0.03	1.00			
Analg.	-0.04	0.47**	-0.07	-0.10	0.35*	-0.06	0.25	0.01	1.00		
Pain	-0.34*	0.17	-0.16	-0.36**	0.27	-0.18	0.22	-0.04	0.34*	1.00	
TV	-0.04	-0.16	0.12	0.16	-0.03	-0.10	-0.30*	0.07	-0.14	-0.20	1.00

PA = Positive Affect, NA = Negative Affect, SES = Self-esteem, Cig. = Cigarettes, Sleep = sleeping problems, Ph. A. = Physical Activity, Analg. = Analgesics, TV = Television
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 3: Patient group. Correlation coefficients (Pearson's r) between Positive affect, Negative affect, Self-esteem, energy, stress, cigarettes, sleeping problems, physical activity, analgesics and television.

Predictor variable	Standardized Beta (β)
Stress	-0.14
Energy	0.16
Cigarettes/day	-0.07
Pain	-0.10
Analgesics	-0.29*
Television hours/day	-0.07
Sleeping problems	0.75
Self-esteem	0.49**

Table 4: Patient group. Standardized weights from multiple regression analysis with affective mood as dependent variable and stress, energy, number of cigarettes/day, pain, analgesics, television, sleeping problems and self-esteem as independent variables *p<0.05, **p<0.01 needs to be added.

Predictor variable	Standardized Beta (β)
Stress	-0.40***
Energy	0.21**
Cigarettes/day	0.03
Pain	-0.13
Analgesics	0.10
Television hours/day	0.04
Sleeping problems	-0.05
Self-esteem	0.41***

Table 5: Healthy volunteers. Standardized weights from multiple regression analysis with affective mood as dependent variable and stress, energy, number of cigarettes/day, pain, analgesics, television, sleep and self-esteem as independent variables **p<0.01, ***p<0.001.

praxis as a way of developing the treatment of this patient group.

Overall, we expected to see more NA and less PA among the patient group as well as more stress and less self-esteem. We also expected to observe different predisposing and similar protective factors and to be able to find key attributes in order to find patients at risk.

Our results clarified some issues of the emotional disturbances among the patient group. They showed evidence of differences between the groups in self-rated stress, analgesics and self-rated energy. In the group of healthy controls stress was counter predictive for positive affective mood, but this could not be shown for the patient group. Not surprisingly, analgesics was found to be counter-predictive for positive Affective Mood in the patient group, but not for the healthy controls. Analgesics was interpreted as a predisposing factor for the Affective Deaf Syndrome (ADS) and identified as a key attribute for the patients at risk. This will be a factor to consider in the treatment aimed at overcoming the affective problems of the patients. Self-rated energy was predictive for positive mood and thus helpful for the healthy controls but not for the patients. Healthy controls experienced energy, but patients did not. This circumstance begs the question: Why was the experience of energy not predictive for positive affective mood in the patient group as it was in the control group? Was it because the analgesics block this energy? The lesser experience of energy in the patient group must be taken seriously and be considered as central both in the prevention of emotional disturbances and in the treatment of the patients' disorders. One reason for the lack of energy among the patients might be due to the psychiatric conditions in the patient group.

Self-esteem was found to predict positive affective mood for both groups although the patients had less self-esteem. The fact that self-esteem is predictive for positive Affective mood has earlier been demonstrated (Archer, Adolfsson & Karlsson, 2008). We have clinically observed that many of the deaf and hard-of-hearing patients have very little support from their families. This may be due to communication difficulties. As the results show the communication problems were huge. Contributing were also psychiatric problems with 42% of the patients fulfilling at least two psychiatric diagnoses. Depression was often combined with anxiety disorder and/or with trauma and stress-related disorders. Living and growing up without full means of communication with the family is a great handicap because usually this is the place for learning to understand oneself, other persons, and society. Many of the families are having problems in different areas and this might be a contributing factor to the Affective Deaf Syndrome. It is interesting to notice that in the study of Black & Glickman they found that 75% of deaf individuals fell into the non-fluent range of communication in American Sign Language (Black & Glickman, 2006). They also found a broader range of diagnoses than in past studies. Compared with hearing patients in the same hospital, deaf patients were more likely to be diagnosed with a mood, anxiety, personality, or developmental disorder. They also found that psychosocial functioning of the deaf patients was generally similar to hearing psychiatric patients.

Considering the pattern of our findings among the patient group compared to healthy controls, it is concluded that all information regarding the differences between patients and healthy controls is useful for designing intervention. The fairly good self-esteem may be a good starting ground for psychiatric treatment. It helps the patients to interact with the intervention program and makes them open enough to integrate the treatment into their lives. As we have seen, the use of analgesics is a problem for the patient group and make them at risk for less affective mood. Analgesics may thus be seen as a key attribute for risk and must be taken into consideration when treating the patients'

psychiatric illness. Earlier studies have shown conflicting results on substance use among deaf people compared to hearing individuals. Black and Glickman (2006) reports a total of substance disorders at 33% in their study and refers to a report by Rainer and Altshuler (1966) where one third of approximately 4,000 patients were presented with alcohol psychoses, but none of the deaf patients received the diagnoses. On the other hand, Pollard (1994) found that the deaf sample had a higher percentage of substance abuse (17%) compared to the hearing sample (15%). In our patient group only two persons were considered having this diagnose, however the praxis in our clinic is that patients with abuse problems are sent to the toxicological unit for treatment, and only comes to our unit when they no longer fulfil the criteria for abuse disorder. It may be considered further why our results indicate that analgesics and not pain is counter-predictive for positive affective mood in the patient group.

Autism spectrum disorder (ASD) was observed in our material in 21% of the patient group. Difficulties in social communication and interaction are diagnostic for ASD. While language difficulties are a core characteristic of autism, as with the disorder itself, linguistic functioning can be highly variable within those on the spectrum. Verbal and nonverbal communications are vital for the formation of social interactions. Thus, insights regarding the nature of linguistic difficulties in ADS also may facilitate the further understanding of basis of this condition.

At the heart of the Affective Deaf Syndrome remains the patients' problems communicating their emotional difficulties. On the basis of present findings, it appears that the patients have the capability to use the self-evaluation questionnaire although this needs to be done in cooperation of with sign language interpreters trained to deal with the issues and concerns that exist in mental health settings.

Limitations

The special situation of this patient-group implies that the number of individuals available for participation was limited. Nevertheless, the findings seem robust. We suggest that repeated self-evaluations over a period of treatment may add to further knowledge of the Affective Deaf Syndrome. One reason for our opinion is that the patients felt at ease with the results when individually revealed to them after the end of the study during their regularly meetings with their psychiatrist. They also expressed that they felt co-responsible for the treatment and this situation has rendered an experience of self-control by the patients and a subjective feeling of contributing to their own progress.

Conclusions

The present study emphasizes deaf and hard-or–hearing psychiatric patients' problems of communicating their emotional difficulties. The questionnaire used in the study contributed to a structured assessment of affective mood and mental distress. As a result, we gained knowledge in understanding the Affective Deaf Syndrome. Firstly, the striking communication problems showed a high rate of non-fluent sign communication (86%) within the families of the patients and a poor knowledge of the Swedish language by the patients. Secondly, self-esteem was found to predict positive affective mood for both groups although the patients had less self-esteem. Positive self-esteem is identified as a protective factor. Thirdly, the result indicated differences between patients and a healthy control groups in self-rated stress, analgesics and self-rated energy. Analgesics was interpreted as a predisposing factor for the Affective Deaf Syndrome (ADS) and identified as a key attribute for the patients at risk. Stress was positively related to sleep disturbance and analgesics.

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