

The Impact of Communication Disorders on Discrimination against Deaf Workers

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ABSTRACT

Purpose: *The study aimed to determine the impact of communication disorders on discrimination against people who are deaf in the workplace, as well as to find the differences in study participants' opinions.*

Method: *The study sample consisted of 171 respondents from different industries in Bosnia-Herzegovina- 57 workers who were deaf, 57 workers who could hear, and 57 managers. Both quantitative and qualitative approaches were used in the survey. The opinions of the respondents were elicited through a questionnaire which consisted of 15 statements. The interviews of workers and managers focussed on the presence of discrimination against deaf workers in the workplace. Responses of respondents were converted to quantified values using analysis of discrimination group. The significance of statistical differences among the samples tested is defined at 0.01 level of significance using F-Test.*

Results: *Discriminant analysis tested the null hypothesis that respondents' answers do not differ regarding discrimination against deaf workers in the workplace. However, differences were found between the groups that felt deaf workers did not have equal position at work in comparison to their hearing co-workers. Participants mentioned a number of barriers in workplaces. Workers were of the opinion that there was significant discrimination in the workplace ($p > 0.01$) between groups of participants.*

Conclusion: *There are statistically significant differences in the opinions of respondents regarding statements that workers who are deaf cannot hold positions equal to their co-workers who have regular hearing.*

Key words: *Communication disorders, deaf employment, discrimination of deaf people at work, employment relations.*

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INTRODUCTION

Hearing loss at moderate levels can and often does have a major impact on an individual's employment status (Mascia & Mascia, 2008).

The benefits to the individual of having employment are, for instance, self-support, participation in society and regular contact with other people (Rydberg, 2010). The success of deaf workers in the workplace depends on their ability to communicate with their bosses. Another social basis for defining deafness is the use of speech versus sign language, particularly a preference for the use of one over the other (Mitchell, 2006). In order to help deaf workers to be more successful at their jobs, it is necessary to assess their skills and to eliminate or mitigate bad communication. Therefore, before starting up activities related to the vocation and professional orientation, it is necessary to have information about each individual's intellectual status, skills, abilities, interests and wishes.

Knowledge about this population's career maturity and career decision-making processes can inform the design and implementation of career education and counselling interventions to help these young people make a sound transition from school to their future occupational lives (Punch et al, 2005). However, the problems of the population with disability are very different in the various jobs they perform. According to Hughes (2002), "In pre-industrial societies, impairment did not represent an affront to the norm, but during the enlightenment and under industrial capitalism, work became rationalised and designed with less place for disorder". In their study, Randle and Hardy (2017) claimed that "disability cannot simply be incorporated into an additive way to understand the exclusion of these workers, but that they face qualitatively different sources of disadvantage compared with other minorities in UKF and TV workplaces". These authors also stated, "This has negative implications for workers with impairments in other labour markets, as project and network-based freelance work, contributing to disadvantage, is seen as both increasingly normative and paradigmatic".

Workplace difficulties with deaf people occur when they are involved in group work or situations such as departmental and staff meetings, and social work-related functions; these are situations that are important for maintaining a career and career advancement (Scherich, 1996; Scherich & Mowry, 1997; Laroche et al, 2000). Some studies indicate that people who are deaf are not sufficiently represented in professional and managerial occupations, and are over-represented in simple occupations, especially in manufacturing, and that they tend to have lower income (Schildroth et al, 1991).

Theoretical Framework on Communication Disorders of People who are Deaf

There are many positive examples of successful speech development in deaf children who have had a cochlear implant from their early age (Connor et al, 2006).

Some studies suggest that there is a critical shortage of professionals trained to provide early intervention services to deaf and hard-of-hearing children and toddlers (Martin-Prudent et al, 2016). However, in such cases, alternative forms of communication need to be developed. In this process, the greatest responsibility lies with teachers. Deaf students arguably present the most complex challenge for teachers of any group of students in both the general and special education populations (Luckner & Hanks, 2003). Implications for rehabilitation are suggested (Kramer, et al, 2006). It is very important to strengthen the education of children who are deaf. In their study 'Enhancing Education for Deaf Children', researchers Swanwick and Marschark (2010) state that currently there is lack of channels for communication from teachers to researchers about the priorities in education, and from researchers to teachers about scientific progress that might be effectively utilised in the learning context.

Jiang et al (2017) have concluded in their research that the parent-child relationship quality greatly depends on the perception of young adults as being responsive. It is noteworthy that during late adolescence and emerging adulthood, parents' caring behaviour is not necessarily interpreted as responding properly to one's needs. This is also very pronounced between parents and their deaf children in adolescence. Many studies indicate that a high number of hard-of-hearing and deaf students reported experiencing psychological abuse (Williams & Porter, 2014).

It is necessary to create new methods of assisting children with disabilities in their transition from school to work (Weathers et al, 2007). Continual assistance is required to ensure that the position best suited to the interests of the deaf individual, one where that person is most likely to succeed, is selected. Given the likelihood of choosing the wrong profession, as well as the rapid technological changes in manufacturing processes, it is necessary to have current knowledge of the trends prevailing in the labour market. The 2011 study by Schley et al, suggests that reduction in the duration of time spent on Social Security programmes is not limited to those with the highest level of scholastic aptitude and that investments in post-secondary education can benefit a broader group of deaf and hard-of-hearing persons. According to these authors, "Investments in post-secondary

training increase the likelihood of employment for persons who are deaf or hard-of-hearing and thus reduce dependency on disability-related income support programmes” (Schley et al, 2011).

Deaf Workers in Noisy Environments

Sometimes deaf workers have to work in very noisy environments. The research results of Morata et al (2005) state that there are facts concerning deaf workers in noisy workplace environments that can be grouped into the following 10 categories: impact on job performance, impact on job safety, impaired ability to hear warning signals, impaired ability to monitor equipment, interference with communication, stress and /or fatigue, impaired communication caused by use of hearing protectors, reduced ability to monitor the environment as a result of hearing protector use, concerns about future quality of life, and concerns about future employability. Graci and Fivush (2017) found that several features of personality, especially neuroticism, showed significant correlations of attachment, narrative meaning and growth and stress. By and large there was agreement between the perceptions of workers, supervisors, and hearing conservation programme managers regarding difficulties associated with hearing loss and consequent needs. These findings suggest that noise-exposed workers with hearing loss face many of the same problems reported in the literature by noise-exposed workers with normal hearing, along with additional concerns primarily about job safety as the result of a reduced ability to hear environmental sounds, warning signals, and so forth. Many authors suggest that the difficulties in this field are still present. “The frustration they would most likely encounter in low-skilled work where support would not be given to much extent and limited opportunity to progress, is outweighed by remaining idle on benefits”, according to Woolfe (2003).

The Use of Sign Language at Work

From the perspective of deaf people, the use of sign language in their presence by people with hearing at the workplace is closely associated with demonstrating personal respect, value, and confidence. The hearing colleagues’ willingness to use sign language is more significant than their fluency. From the perspective of hearing people, use of sign language at work is closely associated with change, pressure, and the questioning of professional competence (Young et al, 2000). For successful integration of deaf people at the workplace, it is necessary to prepare

hearing workers and heads of companies to accept and understand deafness and deaf workers.

Sign language is very expressive and linguistic facial expressions can be misinterpreted.

Energetic signing may make people appear to be excitable or aggressive (Feu & Fergusson, 2003). Integration of deaf workers in the working environment should continue to be promoted. In particular, it is necessary to build programmes that help all participants in this process to have more information about the requirements that arise in the workplace. However, after the completion of professional training, people who are deaf usually cease to be the object of attention of experts and are most often left to rely on themselves. It is necessary to develop a strategy and apply the conclusions of the studies conducted by Dougherty and Lombardi (2016) on key areas that are historically marginalised: student sub-groups, transitions to post-secondary education, and continued focus on employment as an outcome.

Aim

The current research has attempted to determine whether there is a sense of discrimination towards deaf people in the workplace and to find the perceptions of discrimination by their co-workers and their managers at work. On the assumption that the workplace was an important work product and that hearing impairment should not be the cause of discrimination, this exploratory study begins with a zero hypothesis: that there are no differences between the groups on whether there is discrimination against deaf workers.

METHODS

Research Approach

Quantitative and qualitative methods were adopted to gauge the discrimination against deaf workers at the workplace. The interview method was used, with prepared questions designed to define the position of deaf workers. Three groups of respondents answered the same questions.

Study Sample

The use of the word "Deaf" encompasses both audiologic and cultural parameters

and is meant to be inclusive of individuals who have been identified with a hearing loss, including those who are members of the deaf culture, or have a deaf identity.

Participants were found with the help of Social Works Centres and were selected from companies with deaf employees. The sample was drawn from 16 industries: mining, metal, construction, craft and service sectors. Information was obtained about the number of employees and their job descriptions. The directors of the companies were contacted and their consent was taken to interview the deaf workers. Persons with cochlear implants were not considered.

The sample was randomly selected and included the three sub-samples – workers with deafness, co-workers with hearing, and managers. Fifty-seven deaf workers, with hearing damage between 60 and 90 dB as per diagnostic documentation, were found. All of them had been educated with speech and language training due to communication disorders. Following the case-by-case method, their co-workers who could hear were selected, as well as managers who communicate with deaf people on the job.

Inclusion criteria for workers with deafness (n = 57):

- Subjects of both sexes aged 25-55 years, who have difficult and hard-of-hearing impairment;
- Employed for at least one year in the factories where they have co-workers with hearing;
- Those who have education or training in craft.

Inclusion criteria for workers who can hear (n = 57):

- Both sexes, from 25 to 55 years of age;
- Employed in factories where they work alongside deaf co-workers.

Inclusion criteria for managers (n = 57):

- Employed in factories in which they manage the work and have workers who are deaf.

The total sample of subjects subjected to the analysis of variation was N = 171.

Instrument used

A questionnaire with 15 statements was developed for the purpose of the study.

A pilot study verified the reliability of the measuring instrument. The Cronbach Alfa coefficient was 07.2. Re-testing the correlation between the items was $r = 06.8$. The questions used in this research were original and were designed to elicit participants' opinions on given claims.

The scale of response ranges was: I agree (number 1); cannot decide (number 2); I do not agree (number 3). The basic statistical parameters were calculated, and then the frequency response on each of the variables was used. This gave insight into differences in attitude between sample subjects. The quantitative data provided an insight into the distinct differences between the three groups of respondents on several questions (different views of the problem).

Data Collection

By random selection, interviews were conducted with deaf workers, their co-workers and managers. The survey was conducted through direct contact with respondents, at their request. For deaf workers who did not understand speech, a sign language translator was engaged.

In direct contact, they were asked:

Does the inclusion to work positively affect the social development of deaf workers?

Are there barriers that inhibit the inclusion of deaf workers?

Can these deaf workers access the general education curriculum for progress in work?

Are deaf workers qualified to take up jobs in their firms? If so, are they willing to collaborate with other workers and managers?

After the interview, the questionnaire was created administered. Respondents were offered the explanation of certain claims from the questionnaire in sign language, while other respondents filled in the questionnaire without assistance. The answers of the respondents were quantified for statistical analysis. The main questions were:

1. What are the prominent perspectives on the effects of inclusion to work for deaf workers?

2. Are the research findings on the effects of inclusion to work consistent or inconsistent/ is there discrimination in the workplace?
3. What are the salient suggestions to enhance the inclusion to work for deaf workers?

In general, the answers to these questions may be influenced by quality indicators associated with research such as the nature of the researchable questions, validity of instruments, or research designs (Cawthon et al, 2014).

Data Analysis

For the quantitative approach, the analysis of frequencies and basic statistical parameters (arithmetic mean, standard deviation and variance) were used. Since we did not find statistical significance of the differences between the groups of participants based on the arithmetic mean, we tested by t-test. The multivariate statistical methods were accessed. For quantitative analysis, qualitative features were quantified into the numerical system of independent responder variables.

The data was processed by the method of non-parametric statistics. Basic statistical parameters and measures of reliability, objectivity, validity and sensitivity were calculated. The percentage of answers to each of the variables used was calculated, thus providing global insight into the differences in stance between the respondents. In the multivariate analysis, the respondents' answers were observed through a system of independent variables. To finally achieve the objectives declared in the work, methods of multivariate analysis were used: discriminate analysis and regression analysis (Press & Wilson, 1978).

Ethical Considerations

There was no conflicting interest in ethical issues in the research, therefore, ethical approval was not sought.

RESULTS

Qualitative Analysis

Investigation of the experiences of 57 deaf workers in inclusive work revealed that there are many factors that influence their participation in inclusive workplaces, including their degree of hearing loss, managers' attitudes, and managers' abilities to engage workers in their workplace. Findings show that inclusion has a positive

impact on the social achievement of workers with hearing loss. However, the positive effects of inclusion increase when workers receive social encouragement and support at work from managers. The results showed that deaf workers did not exhibit problem behaviour and negative social outcomes in their workplace. They were not significantly different from their typical hearing co-workers in social behaviour, but were significantly different in communication participation. In some cases they have socially withdrawn behaviour. The findings revealed that in general employing deaf workers in workplaces increases contact between deaf workers and typical hearing workers. Some deaf and hard-of-hearing participants reported that the inclusive work provided more opportunities for learning speech with their co-workers. In a small number of cases, the interactions between workers with hearing loss and typical hearing workers were increased by managers attempting to develop collaborations between them in order to facilitate the learning of speech (to improve communication).

Effective contact between workers is a significant reason for hearing workers to have positive attitudes towards workers with hearing loss. Deaf workers in segregated areas of work exhibited the lowest levels of adjustment overall. Also, partially integrated workers exhibited better adjustment with deaf co-workers than did typical hearing workers. Mainstream workers reported better adjustment with typical hearing workers than did partially integrated workers, exhibiting the same levels of adjustment as those of typical hearing workers. Findings indicated that deaf workers in separate areas of the job preferred to communicate with hearing workers using sign language, speech and sign, or notes. The workers also reported that they preferred to use sign language or speech and sign to communicate with co-workers in workplaces. In some cases, the findings showed that deaf workers were similar to their co-workers in acceptance and friendly relationships, but there were differences in social competence.

Quantitative Analysis

Table 1 show the percentage of answers about the impact of communication on discrimination against deaf workers in the factories where they are employed.

Analysing attitude percentages of workers who are deaf, according to their positions in the workplace, it can be concluded that 64.9% of deaf workers did not agree that they cannot have the same operating position as corroborative workers, while 57.9% of workers who can hear agreed with this statement. About 56.1% of managers also agreed with this.

Table 1: Responses to the Set Attitudes (in percentages)

Attitudes	Workers who are Deaf			Workers who can hear			Managers		
	I agree %	I cannot decide %	I do not agree %	I agree %	I cannot decide %	I do not agree %	I agree %	I cannot decide %	I do not agree %
1. Workers who are Deaf do not have an equal position with other workers	28.1	7.0	64.9	57.9	12.3	29.8	56.1	5.3	38.6
2. There is no discrimination towards workers who are Deaf in the workplace	26.3	8.8	64.9	17.5	5.3	77.2	15.8	5.3	78.9
3. I would rather hire a person who is Deaf who has developed verbal speech	33.3	3.5	63.2	47.4	15.8	36.8	45.6	22.8	31.6
4. Managers interested that the worker is good, regardless of whether he is Deaf or not	5.3	7.0	87.7	7.0	5.3	87.7	8.8	3.5	87.7
5. It is important that a worker who is Deaf understands instructions from managers	3.5	3.5	93.0	3.5	3.5	93.0	1.8	0	98.2
6. It is not important to a manager if work orders are issued through a person who knows sign language	7.0	0	93.0	3.5	0	96.5	3.5	1.8	94.7
7. Deaf workers have good interaction with their hearing co-workers	78.9	5.3	15.8	78.9	5.3	15.8	70.2	5.3	24.6
8. It is necessary to employ any person who is Deaf, provided one is well qualified for the job	5.3	1.8	93.0	10.5	3.5	86.0	8.8	5.3	86.0
9. Workers who are Deaf only create problems in the workplace	12.3	0	87.7	8.8	8.8	82.5	3.5	3.5	93.0
10. Managers do not have enough patience with workers who are Deaf	24.6	15.8	59.6	36.8	17.5	45.6	26.3	17.5	56.1
11. Workers who are Deaf can work as well as workers who hear	8.8	0	91.2	3.5	0	96.5	7.0	0	93.0
12. Workers who are Deaf have to work more than workers who can hear, to keep job	17.5	3.5	78.9	14.0	8.8	77.2	15.8	1.8	82.5
13. Workers who are Deaf always work in low-paid jobs	17.5	8.8	73.7	19.3	8.8	71.9	21.1	8.8	70.2
14. Workers who are Deaf cannot thrive in the workplace	14.0	12.3	73.7	24.6	12.3	63.2	24.6	7.0	68.4
15. Workers who are Deaf can work in the same conditions as all other workers	87.7	7.0	5.3	70.2	5.3	24.6	63.2	7.0	29.8

In the following analysis statements:

"There is no discrimination of workers who are deaf in the workplace" - all three groups of respondents, in most cases, did not agree with the offered statement, and this suggests that discrimination against deaf workers is present.

"To always prefer to hire people who are deaf if they have developed verbal speech" - workers who are deaf, in most cases, did not agree with the offered statement, while workers who could hear and managers, in most cases, supported this statement.

"Managers are interested in a good worker, regardless of whether he is deaf or not" - all three groups overwhelmingly expressed their disagreement

with this statement, and this indicates the presence of discrimination in the workplace.

"It is important that a worker who is deaf understands instructions when they are issued a work order" - a high percentage of all groups (over 90%) disagreed with the statement. Based on respondents' answers it can be concluded that workers who are deaf are mostly employed in factories as auxiliary workers or work in automated and calibrated positions.

"It is not important to a manager if work orders are issued through a person who knows sign language" - all three groups of respondents expressed their disagreement with this statement. It may be concluded that communication disorders have a significant impact on discrimination.

"Deaf workers have good interaction with their hearing co-workers" - all three groups of respondents generally agreed with this statement.

"It is necessary to employ any person who is deaf, provided that he/she is extremely professional" - a large percentage of all three groups of respondents said that they did not agree with this statement. These attitudes are indicative of bad experiences, where expertise is not a dominant requirement for obtaining a better work situation for workers who are deaf.

"Workers who are deaf only burden and create problems in the workplace" - all three groups of respondents disagreed with the statement.

"Managers do not have enough patience with workers who are deaf" - a higher percentage of respondents expressed their disagreement with this statement.

"Workers who are deaf can work just as well as other workers" - all three groups of respondents disagreed with this assertion. It may be concluded that in all likelihood workers who are deaf are considered less valuable, while workers with hearing and managers underestimate deaf workers.

"Workers who are deaf have to work more than hearing people to keep the job" - all three groups of respondents disagreed with this assertion.

"Workers who are deaf always work in lower-paid jobs" - all three groups of respondents disagreed with this assertion.

"Workers who are deaf cannot thrive in the workplace" - all three groups of respondents disagreed with this assertion.

“Workers who are deaf can work in the same conditions as other workers” - all three groups of respondents generally agreed with this statement.

The results reveal that there are differences between the groups that show that workers who are deaf do not have equal positions at work in comparison to their hearing co-workers.

Relationships between Groups of Respondents

Canonical discriminant analysis between groups - This method was used to test the null hypothesis that there is no difference between respondents' answers regarding discrimination against workers who are deaf in the workplace. Stepwise statistics were used to test statistical significance of Wilks' Lambda. At each step, the variable that minimises the overall Wilks' Lambda was entered.

Table 2 presents the discriminant analysis between groups.

Table 2: Stepwise Statistics

Variables Entered/Removed ^{a,b,c,d}									
Step	Entered	Wilks' Lambda							
		Statistic	df1	df2	df3	Exact F			
						Statistic	df1	df2	Sig.
1	var1	.912	1	2	168.000	8.127	2	168.000	.000
At each step, the variable that minimises the overall Wilks' Lambda is entered.									
a. Maximum number of steps is 30.									
b. Minimum partial F to enter is 3.84.									
c. Maximum partial F to remove is 2.71.									
d. F level, tolerance, or VIN insufficient for further computation.									

The results showed differences between the groups regarding whether workers who are deaf have equal positions at work in comparison to their hearing co-workers:

"Workers who are Deaf do not have an equal position with other workers", and

"Workers who are Deaf can work in the same conditions as all other workers".

In the group testing environment, the first variable indicates statistical significance of $p = .000$ ($F = 8.127$), and variable 15 shows the statistical significance of $p = .003$.

($F = 6.073$). It was observed that in the responses on gender situation of deaf workers in the workplace, there are statistically significant differences between groups and Wilks' Lambda is .912 at the level of statistical significance of $p = .000$.

Table 3 presents the summary of Canonical Discriminant Functions.

Table 3: Summary of Canonical Discriminant Functions

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.912	15.514	2	.000

By the logic of the method applied, the statistical significance of the observed groups of respondents was expressed in isolated discriminant functions. Using discriminant analysis between the three groups of workers, it appears that the first discriminant function is statistically significant: $p = .000$, Chi-square, 15.514. This is proof that the groups of respondents differed significantly on dependent variables.

Table 4 presents functions at group centroids. The centroids indicate the distance of the group of respondents in the measuring area. Centroids represent the arithmetic mean of each group in the relation on a common arithmetic mean. Centroids are discriminant scores for each group when the variable means (rather than individual values for each case) are entered into the function.

Table 4: Functions at Group Centroids

Groups	Function
	1
Workers who are Deaf	.431
Workers who can hear	-.273
Managers	-.158

The study groups are unequal, and the optimal cutting point is the weighted average of the two values. These values are for informational purposes. The differences between groups could be identified on the basis of the mutual distance between the centroids. By analysing the centroids for the first discriminate function, it can be seen that the distance between the groups is most pronounced

among workers who are deaf and managers, followed by workers who can hear, and then managers.

It is clear (see Table 4) from the first discriminate function that there are segregator statements against workers who are deaf from their managers. The reason is that they do not know the problems deaf people have, and workers who are deaf have negative experiences. Deaf workers feel uneasy at the workplace when they work alongside hearing workers. In the course of the research, it was noticed that the workers who are deaf are mainly isolated in special labour departments or facilities, except in some companies. This situation contributes to the segregation between workers who are deaf and their managers who do not come in contact with them frequently, and issue work orders through their assistants who know sign language. From the viewpoint of managers, "It is not important to the managers when work orders are issued through a person who knows sign language".

Classification Statistics

Table 5 presents Fisher's linear discriminant functions.

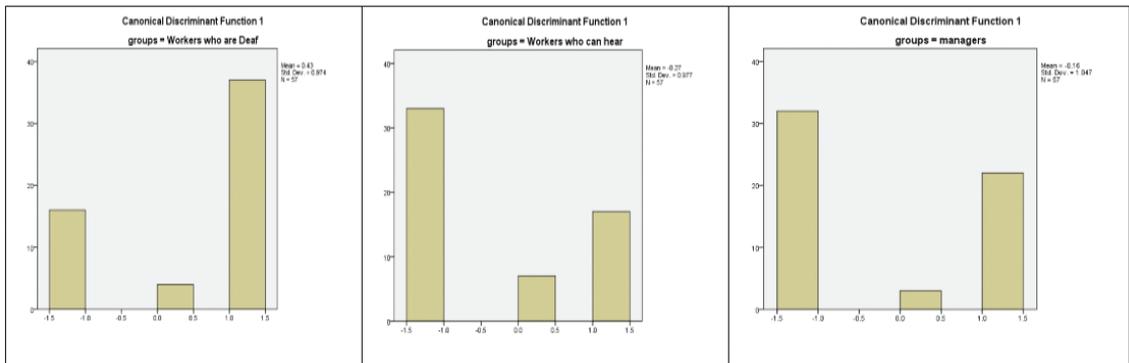
Table 5: Classification Function Coefficients

Attitudes 1.	Groups		
	Workers who are Deaf	Workers who can hear	Managers
Workers who are Deaf not to have an equal position with other workers	2.782	2.020	2.143
(Constant)	-4.393	-2.835	-3.054
Fisher's linear discriminant functions			

The values of the coefficients in Table 5 show that deaf workers have the highest coefficient of discrimination, followed by managers. This is proof that the problem of unequal position of deaf workers needs to be addressed in these groups. Analysis of their statements found that both groups were aware of communication issues in the workplace. Typical hearing workers attached less importance to this problem than the other two groups.

Figure 1 presents the Separate-Groups Graph.

Figure 1: Separate-Groups Graph



Separate-group plots are for informational purposes. If two or more distributions overlap too much, it means they too do not discriminate (poor discriminant function). On Separate-group plots it can be seen that in this case the distribution does not coincide. It is proof that the discriminatory function reflects well the survey of measurements on dependent variable.

The Impact of Communication on Discrimination against Deaf Workers in the Workplace

Regression analysis was used to determine the impact of communication disorders on discrimination against deaf workers in the workplace. Two dependent variables were used, looking at the statements in the questionnaire related to communication in the work processes: "I would rather hire a person who is Deaf who has developed verbal speech" (question number 3 which was quantified by the Likert's type scale), and "It is not important to a manager if work orders are issued through a person who knows sign language (question number 6 which was quantified by the Likert's type scale).

Table 6 presents the model summary using dependent variables.

Table 6 shows that the total correlation in the system of applied variables relative to selected dependent variables is satisfactory ($R = .545$); ($R = .543$). This also shows the values of the Durbin-Watson test. It is proof that quantified nominal dependent variables can be used as predictors of questions related to the inclusive work of deaf workers in the workplace. In practice, it is enough to ask these two questions to find out the position of deaf workers in the workplace.

Table 6: Model Summary - Dependent variables: 3^a & 6^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.545a	.297	.234	.81365	1.789
2	.543b	.295	.232	.37619	2.026
a. Predictors: (Constant), var4, var9, var15, var2, var6, var14, var1, var11, var10, var12, var8, var5, var13, var7					
b. Predictors: (Constant), var3, var9, var5, var15, var11, var2, var14, var12, var10, var4, var1, var8, var7, var13					

Given that the selected variables can be used as predictors, the statistical significance in predicting has been noted.

Table 7 presents ANOVA results using predictor dependent variables.

Table 7: ANOVA - Dependent variables: 3^a & 6^b

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression 1	43.672	14	3.119	4.712	.000a
Regression 2	9.233	14	.659	4.660	.000b
a. Predictors: (Constant), var4, var9, var15, var2, var6, var14, var1, var11, var10, var12, var8, var5, var13, var7					
b. Predictors: (Constant), var3, var9, var5, var15, var11, var2, var14, var12, var10, var4, var1, var8, var7, var13					

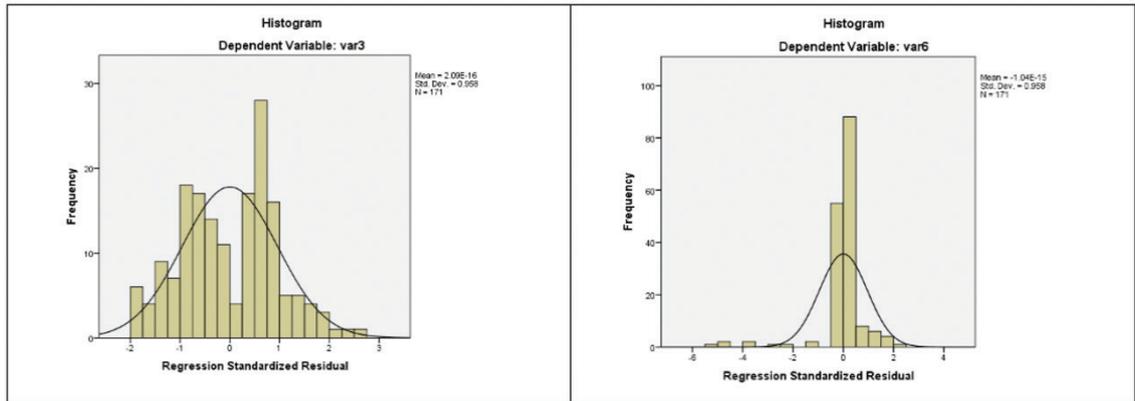
Variance analysis found that the correlations were statistically significant ($p=.000$). The statistical significance of differences between the standardised coefficients and the overall correlation with non-standardised coefficients (total correlation used variables - Beta coefficient, which is significantly correlated with the statement No. 3, "I would rather hire a person who is Deaf who has developed verbal speech"), has a statistically significant correlation to statement No.1 ("Workers who are Deaf do not have an equal position with other workers", $R=.394$, $p = .000$).

The statistical significance of differences between the standardised coefficients and total correlation coefficients non-standardised (total correlation used variables - Beta coefficient, which is significantly correlated with the statement No. 6, "It is not important to a manager if work orders are issued through a person who

knows sign language"), has statistically significant correlation with the statement No.5 ("It is important that a worker who is Deaf understands instructions of a manager", $R=.302$, $p=.000$).

Figure 2 presents a histogram of dependent variables.

Figure 2: Histogram of Dependent Variables: 3&6



This frequency histogram illustrates how each prediction variable is associated with the total system variables. It can be noticed that the quantified nominal variable 3 correlates with a larger number of respondents' responses. Respondents have made a strong claim that they would rather work with deaf workers who can speak. This is proof that communication affects discrimination against deaf workers.

DISCUSSION

This research study puts forward a hypothesis that there is no discrimination against deaf workers in the workplace and that their communication difficulty does not significantly affect interpersonal relationships between workers and managers. It was assumed that all three study groups would have approximately the same opinion about this. This was the result on most of the questions in the questionnaire (see Table 1) except for the two questions which received very different answers. This proves that there is a problem of deaf workers having unequal positions in the workplace. Practice has shown that continuous work, the type of rehabilitation procedures and monitoring the development of each individual who is deaf can reveal important characteristics that influence future

professional choices. Managers' attitudes are different from those of deaf people. However, this also depends on their life situations – do they have a family or live alone? The studies that Wilkinson et al (2017) have been discussing show that this is a very important field of research. Their article has explored and analysed the work–life experiences of a group of individuals traditionally overlooked in work–life balance research – young to mid-age professional and managerial employees who live alone and do not have children. The present study did not take into account these aspects and is therefore deficient.

The main goal of these activities is to find their interests and select the most appropriate positions in order to reduce, as far as possible, the differences between deaf workers and workers who can hear, and thereby avoid negative consequences and discrimination.

In the manual “Working with Hearing Loss”, provided by The Canadian Hard of Hearing Association as a guide to successful workplace accommodation for employers, hard- of- hearing employees and entrepreneurs, the introduction states that hearing loss is considered the fastest-growing disability in the world. In North America, 1 in 10 people is thought to have some degree of hearing loss, ranging from mild loss to profound deafness; for those aged 65 and over, the percentage rises to 50%. It is a rare business that has no employees with hearing loss, and most organisations can expect hearing issues to become increasingly common among their workers (The Canadian Hard of Hearing Association, 2008). This is confirmed by research (Wagner-Hartl et al, 2018). In their study, “Issues in the school-to-work transition of hard- of-hearing adolescents”, Punch et al (2004) examine the implications of current labour market trends for young people, in particular for those with hearing loss, and review data on employment outcomes for deaf and hard-of-hearing people. They discuss the environmental and attitudinal barriers that can influence the career outcomes and advancement of this population, consider the impact of hearing loss on adolescents’ career maturity, and review the studies on this topic in the literature. Recommendations for research and practice are provided, and this study can serve to compare and mitigate problems for future deaf workers. Problems come with the perception of deafness as one type of disability. However, the fact is that deaf and hard-of-hearing employees tend to be placed in entry level positions and rarely advance; frustrated with seemingly dead-end jobs, a significant number of these former clients simply give up, quit their jobs, exit the employment pool, and return to subsistence on public benefits (Baker, 2009). Deaf people identify themselves as

a socio-cultural group of their own and do not see their deafness as impairment or a disability (Al-Makhamreh, 2016). However, people who can hear continue to think differently. Deafness is perceived as inability, and there is always the possibility of discrimination.

In the present study the respondents were asked: "It is important that a worker who is deaf understands managers' instructions" and "It is not important to the manager if work orders are issued through a person who knows sign language". Among those who are deaf 93% answered "I do not agree"; while answers of workers who could hear were 93% and 96.5% and managers' answers were 98.2% and 94.7% that they do not agree with the statements. Some workers who are deaf need help with communication at the workplace.

Some earlier studies have shown that employers have not recognised the needs of deaf workers and employers have some form of stigmatisation of deaf workers (Hétu & Getty, 1993). Some of the studies published earlier also found that the use of support staff was informal and not formal; for example, an associate can agree to make phone calls on behalf of a worker with hearing loss. Studies have shown that employers recognise the needs of workers who have hearing and have less awareness of the needs of workers who are deaf (Scherich & Mowry, 1997).

Some conclusions can be drawn from a study by Punch et al (2006) titled, 'Career Barriers Perceived by Hard-of-Hearing Adolescents': "The qualitative findings provided insight into the students' perceptions of the interrelated concepts of the potential barriers - people not understanding my hearing loss and people's attitudes about my hearing loss". Although interview participants were concerned about people's lack of understanding of their hearing loss, few expected to encounter outright discrimination or hostile, negative attitudes (Punch et al, 2006). The present study has not found such tendencies. Deaf workers did not show any form of fear or dissatisfaction, but most of them complained that managers did not have enough patience with them.

There are more recent positive reports on the employment of deaf people and their social status. El-Khiami (1993) reported on employment status and career experiences of deaf people, and described the extremely positive transition from college to jobs. In his research, only 4% did not join the workforce and the rest of the job searches ended in employment immediately or within a few months after graduation. Approximately 29% of the respondents stated that they were in a professional or managerial profession, and 46% were working in technical

and professional areas (El-Khiami, 1993). Schroedel and Geyer (2000) found that the percentage of respondents working in professional, managerial and technical professions had increased. They also found that 5% of former students of Arkansas University were unemployed, and 15% were under-employed. More than 62% of deaf graduate students, but only 38.5% of respondents were employed in professional, managerial and technical affairs; 36.5% of the respondents were employed in crafts, machines and occupations (Schroedel & Geyer, 2000). Mallett and Wapshott (2017) pointed out how employment relationships are changing in relation to the nature of work.

Results of the current study have shown that deaf workers generally have weaker professional qualifications and lower paid jobs. The percentage of respondents working in professional, managerial and technical professions were found not to have increased. The study also found that about 5 % of them were under-employed. Only those respondents with a strong emphasis on voice were employed in managerial and technical affairs, but over 95% of the respondents were employed in crafts, machines and occupations.

However, the situation is specific to workers who are deaf. In this study, it can be concluded that there is discrimination against deaf workers at their workplace. This form of discrimination is logical in relation to communication. It has been shown by regression analysis with predictions in relation to the dependent variables that were analysed. The problem is the use of sign language between workers and managers. Significant discrimination is evident in the interview statements "Workers who are Deaf do not have an equal position with other workers", and "Workers who are Deaf can work in the same conditions as workers who can hear". All the respondents mainly differed in the statements that assessed work capacity and equality of workers who are deaf. Workers who are deaf also noticed these problems, and were not satisfied with their work situation, as could be seen in the descriptive analysis. According to the research findings, managers and workers who can hear do not have a realistic picture of workers who are deaf. Also, it was noticed that people who are deaf often do not do the work they are trained for and are mostly employed in jobs that require physical labour. This may be an additional problem that hinders their socialisation and integration in the workplace.

Limitations

The limitation of this study lies in the reduced research tool that did not have enough questions. Although the questionnaire was original, this limitation exists

because of the low number of deaf people in the sample, so it had to meet the criterion of three respondents answering one question. It would be worthwhile for future research in this area to examine how many workers and managers interact with deaf workers, with each other or know the sign language.

CONCLUSION and IMPLICATIONS

Behavioural models of close relationships between deaf workers and non-deaf colleagues may reflect on the quality of interaction between alternative forms of communication. This model could be successful for working with deaf people.

While conducting the interviews and carrying out primary analysis, it became clear that there was heterogeneity within the sample in terms of the experiences of and attitudes towards workers who are deaf. Deaf employees face a couple of issues, particularly employment conditions and promotions, and workplace accommodation, that are critical. The results of this study can be used by readers as predictors of anti-discrimination in recruiting deaf people.

Results of the research showed that there are statistically significant differences in the opinions of respondents regarding statements that workers who are deaf can have equal status and that workers who are deaf can work in the same conditions as workers who can hear. This points to the discriminatory features of their problem and at the same time refers to the underestimation of their working abilities. Regression analysis has established predictors that isolated problems through values classification. This classification can help professionals in the methodological procedure of searching for adequate solutions to the problem. Therefore, it is necessary to make some modifications in the context of educating deaf people so that they receive better professional training.

There should also be motivation to use bilingual communication with the deaf population. It was found that deaf workers all gained their vocational skills through the use of bilingual education (using sign language and partially speaking, with lip and face reading). None of the respondents who are deaf use only sign language in communication. Given that most deaf people have no jobs, it is assumed that the deaf workers in the study sample were more motivated to learn bilingual speech. Some studies on the general population of high school students in Norway indicate that learners in bilingual education have shown more motivation in almost all of the areas examined in this study (Mearns et al, 2017).

Collaboration with deaf people in the workplace can contribute to mutual development in bilingual communication as well as development in thinking and knowledge. In addition, Duarte, 2019, dealing with translanguaging in mainstream education (a socio-cultural approach) indicated that "competence in family languages does not have to be at a high level to engage in cognitively demanding talk, as even receptive skills or youth jargon were shown to be useful resources for inter thinking".

The present research on the inclusive work of deaf workers is original in that the opinions of all participants in the working environment were considered. Based on the results, the conclusion was that deaf workers are well trained for the work they are doing and are well-adapted in the workplace. However, there are feelings of discrimination that are associated with their poor communication. These results show that at the level of professional education there should be more communication interactions with other workers. This would reduce the differences between deaf workers and their co-workers.

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