

Psychological Work Environment and Professional Satisfaction Among Indian Audiologists

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Abstract: *Objective:* The study examined self-reported work environment and professional satisfaction among Indian audiologists.

Method: A cross-sectional online survey was conducted using the demand-control-support questionnaire (DCSQ), a short version of the effort-reward-imbalance (ERI) questionnaire and open-ended questions to explore professional issues. Seventy-one Indian audiologists participated in the survey.

Results: No association was found between demographic factors (i.e., gender, education, work type, and work settings) and the DCSQ and ERI sub-scales. Using the demand control model, 14% of audiologists reported working in a high-stress psychological work environment. Using the ERI ratio to estimate the imbalance between efforts and reward, it was observed that 72% of the participants experienced unfavourable working situations where the reward did not correspond to the effort made. Audiologists identified various professional issues including 'lack of awareness of the profession among public' and 'unethical practice by other professionals and unqualified people is a concern', and also made some suggestions on how to overcome them.

Conclusions: The results suggest that a high percentage of audiologists perceive to be practising in high effort-low reward working conditions in comparison with audiologists in other countries such as Sweden. Further work is required to understand, and possibly overcome various professional concerns raised by audiologists.

Keywords: Audiologist, hearing healthcare, healthcare professional, occupational stress, organisational form, India.

INTRODUCTION

Audiology as a healthcare profession has existed in India since mid-1960s, and the field has expanded exponentially in recent years. According to an estimate in 2007, there are nearly 1200 audiologists in India [1]. There is also a rapid expansion in the number of institutes offering audiology courses. Currently, there are nearly 50 institutes accredited by the Rehabilitation Council of India (RCI) and over 30 of them actively offer courses. With this information in mind, we anticipate that there are currently over 4000 audiologists practicing in India.

Traditionally audiology services in India were limited to tertiary level publically funded hospitals and national

institutes. However, there has been a significant increase in the number of private clinics in India, likely due to efforts from national chains. Currently, audiologists in India work in a variety of work places including publically funded hospitals, private clinics, educational institutes and hearing instrument manufacturers [1-3].

Studies from the fields of human resources and business management have suggested that the psychological work environment has an impact on both psychological well-being and physical health [4]. Little is known about the work environment and professional satisfaction of audiologists, with the exception of two studies in western countries including the USA and Sweden [5, 6]. In our previous survey, we explored self-reported audiological practice in India [3]. As a natural progression, the aim of the current study was to examine the psychological work environment among Indian audiologists. In this study, we also compare our

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results with Swedish audiologists' data from a recent study [6]. In addition, we also examine the professional issues faced by audiologists using a qualitative approach.

METHOD

Study Design

The current study used a cross-sectional survey design. The survey was directed towards audiologists currently practicing in India. The survey was advertised in Audiology India Facebook page with brief information and a link to the online survey administered via Google Form. Seventy-four audiologists completed the survey. However, three of them had to be excluded, as they were either students or audiologists practicing outside India. The final sample included in the analysis consisted of 71 audiologists. The study methods were approved by the research ethics board of All India Institute of Speech and Hearing, Mysore.

Outcome Measures

The survey included four sections: (1) Demographic information; (2) Demand-Control-Support Questionnaire (DCSQ); (3) Effort Reward Imbalance (ERI) questionnaire; and (4) Two open ended questions.

Demographic information section included: age, gender, education, number of years of experience, population served (e.g., adults, children), work environment (e.g., public clinic, private clinic), number of audiologists in the practice and average number of patients seen per day.

The DCSQ consists of 17 items that are divided into three sections: psychological demand (five items), control or decision latitude (six items), and social support (six items). The demand sub-scale examines the effect on workload and task related requirements on mental alertness or arousal. The control sub-scale examines intellectual decisions and authority over decisions. The social support sub-scale probes into the experience of support at work. All the three sub-scales are rated on a 4-point Likert scale (e.g., 'Yes, often' to 'No, almost never' in the demand and control sub-scales; 'I totally agree' to 'I totally disagree' in the support sub-scale). The scores on the demand sub-scale range from five to 20 and the scores on the control and support scales range from six to 24. Lower score on demand scales indicate higher demand, lower scores on control sub-scale indicate more control, and

lower scores on support sub-scale indicates more social support. Two constructs can also be generated using the sub-scales. Variable 'strain' is calculated by dividing the demands by control sub-scale scores and the variable 'iso-strain' is calculated by dividing the strain by support sub-scale scores. The sum of each sub-scale, *strain* and *iso-strain* scores are reported in this paper.

ERI is a 16-item questionnaire, which is divided into two sections: effort sub-scale (five items), and reward sub-scale (eleven items). The effort sub-scale examines perceived demand, and the reward sub-scale examines rewards at work and coping strategies. The responses in both sub-scales are obtained in two steps: firstly, agree (yes) or disagree (no) on a statement, and secondly, rating on 4 point Likert scale (i.e., Agree, I don't feel distressed to Agree, I am very distressed). For this reason, the scores on each items range from 1 to 5. The scores on effort sub-scales range from 5 to 25 and the scores on reward sub-scales range from 11 to 55. For each individual participant, the effort-reward-ratio (i.e., ERI ratio) can be calculated using the formula $e/(rc)$ where e is sum of scores in the effort sub-scale, r is the sum of scores in the reward sub-scale and c is a correction factor (0.454545) to account for the imbalance in the number of items in sub-scales. An ERI ratio below 1.0 is considered to be a favourable working condition. This would refer to a situation at work where the participant puts in relatively low effort but receives high reward. A ratio greater than 1.0 is considered unfavourable. This would refer to a situation where the participant puts in lot of effort but does not receive adequate, or the expected reward. The sum of scores in each sub-scale and the effort-reward-ratio are reported in this study.

There were two open-ended questions aimed at understanding audiologists' opinion on current professional issues. The first question asked about the main professional issues related to audiologists practice in India in the order of importance. The second question asked about the audiologists' recommendation of actions that could be taken to overcome the main professional issues they listed in the previous question.

Data Analysis

Descriptive statistics were used to examine the data in the first instance. T-tests were performed to compare the results of the current study with that of a previous study in Sweden [6]. Chi-square test was used to study

the association between demographic variables and demand control and effort reward scale results. Pearson's correlation was performed to study the association between DCSQ and ERI factors. The open-ended questions were analysed using qualitative content analysis [7].

RESULTS AND DISCUSSION

Table 1 shows the demographic details of the current study in relation to study on Swedish audiologists [6]. The table also presents the results of t-

tests that compare some variables between two study samples. The two study samples showed differences in terms of many variables: age [$t(70)=-16.4$, $p < 0.001$], duration of work experience [$t(70)=-6.79$, $p < 0.001$], number of appointments per day [$t(70)=3.93$, $p < 0.001$], control [$t(70)=-7.57$, $p < 0.001$], social support [$t(70)=6.62$, $p < 0.001$], ERI effort [$t(70)=-8.86$, $p < 0.001$], ERI reward [$t(70)=-3.65$, $p < 0.001$], and ERI effort reward ratio [$t(70)=-3.86$, $p < 0.001$]. The differences in DCSQ and ERI results between the two study samples may have been influenced by discrepancies in demographic factors.

Table 1: Descriptive statistics

	India (n=71)	Sweden (n=500)	Significant difference * = $p < 0.001$
Age in years (Mean±SD)	29.27±7.93	44.7±11.2	*
Gender (%)			
Male	49.3	6.2	
Female	50.7	93.8	
Education (%)			
Bachelors	36.6	NA	
Masters	56.3		
Doctorate	2.8		
Other	4.2		
Work type (%)			
Full-time	91.5	65.6	
Part-time	8.5	34.4	
Population served (%)			
Both adults and children	94.4	NA	
Adults only	4.2		
Children only	1.4		
Work setting (%)			
Public clinic	9.9	NA	
Private clinic	66.2		
Education	8.5		
Other	15.5		
Number of audiologists in the workplace(Mean±SD)	6.15±13.17	NA	
Audiologists work experience (Mean±SD)	5.63±7.41	16.9±11.6	*
Number of patients seen per day(Mean±SD)	10.94±10.37	6.1±2.4	*
DCSQ (Scores±SD)			
Psychological demand	10.41±2.03	10.5±1.9	*
Control / decision latitude	11.46±2.29	9.4±1.9	*
Support	11.87±2.38	10±3.1	
Strain	0.93±0.21	NA	
Iso-strain	0.08±0.03	NA	
ERI (Scores±SD)			
Effort	12.49±4.19	16.9±3.6	*
Reward	24.20±9.21	28.2±7.6	*
Effort-reward-ratio	1.21±0.37	1.39±0.4	*

Dichotomized Responses on the Control and Demand Sub-Scales and ERI Ratio

Participants' responses on the DSCQ sub-scales were dichotomized as a score: below the median value (low score) and above the median value (high score). A low score on the demand sub-scale was considered as a situation with high demand, a low score on control sub-scale was considered a situation with high control and a low score on support sub-scale was considered a situation with high social support [8]. Chi-square test results showed no association between DSCQ sub-scales (i.e., demand, control and support) and factors such as gender, education, work type and work settings. Table 2 shows the distribution of participants based on demand-control model. These results indicate that 37% of the participants have a psychological work environment that is low in demands and low in control (i.e., *passive*), about 28% work in an environment that is low in demands and high in control (i.e., *low stress*), about 14% work in an environment that is high in demands and low in control (i.e., *high stress*), and about 21% work in an environment that is high in demands and high in control (i.e., *active*).

These numbers are encouraging, as only 14% of the participants appear to perceive that their work environment is stressful. Professionals in the *high-stress* work environment category tend to have higher risk of job dissatisfaction, and increased risk of psychosomatic health complaints [9]. On the contrary, an *active* work environment is considered to be most nurturing where increased learning and motivation, and skill improvement are thought to occur [10]. This situation leads to increased job challenge and satisfaction. Sannes *et al.* (2005) showed that anxiety and depression levels increased linearly with higher demand, but increased control appears to have a synergistic effect on increasing demand. However, a large majority of the professionals (37%) perceive their job environment to be passive, i.e., less professionally and intellectually nurturing. This is not a desirable trend as *passive* job environment can lead to loss of previously learnt skills. Finally, professionals in a low-

stress work environment are likely to have higher than average levels of health and happiness. These results suggest that most audiological work places are less stressful, compared to, for example a hospital nurse [11]. However, the large *passive* work environment warrants improvement in both demand and control in audiological work environments. The lack of relationship between the work environment trends and that of any personal variables is surprising. One possible reason for this result could be unequal sample sizes across different categories.

The participants ERI ratios were also dichotomized as a score below 1.0 (low score) that was regarded as favourable working conditions (i.e., relatively low effort for high reward) and a score equal to or above 1.0 (high score) was regarded as an unfavourable work situation (i.e., high effort for not receiving adequate or expected reward). Chi-square test results showed no association between ERI ratio and factors such as gender, education, work type and work settings. Overall, the dichotomized results of ERI ratio suggest only 28% of participants reported favourable work conditions (low effort and high reward), while 72% reported unfavourable work conditions (high effort and low reward).

An unfavourable work environment could lead to negative emotions such as low self-esteem and increased stress [12]. On the contrary, a favourable work environment will promote self-esteem, self-worth, hence, satisfaction and success [13]. The estimates obtained among Indian audiologists appear better than Swedish audiologists, where only 14% report to work in a favourable work environment. However, the sample size of the current study is lower than the Swedish study, with a possibility that only the more enthusiastic and modern audiologists responded in the current survey.

Correlation between DCSQ and ERI Factors

Table 2 shows Pearson's correlation among DCSQ and ERI sub-scales. The results suggest a weak but

Table 2: Distribution of Sample (n=71) to the Demand-Control Model

		Control		Total
		High control	Low control	
Demand	High demand	15 (21%)	10 (14%)	25 (35%)
	Low demand	20 (28%)	26 (37%)	46 (65%)
Total		35 (49%)	36 (51%)	71 (100%)

Table 3: Correlation between DCSQ and ERI Factors (* = $p < 0.01$; ** = $p < 0.001$)

	DCSQ Demand	DCSQ Control	DCSQ Support	ERI Effort	ERI Reward
DCSQ Demand	1.00				
DCSQ Control	0.39**	1.00			
DCSQ Support	0.16	0.46**	1.00		
ERI Effort	-0.32**	0.18	0.15	1.00	
ERI Reward	-0.10	0.34**	0.30*	0.60**	1.00

positive correlation among the following factors: DCSQ demand and control sub-scales, DCSQ control and support sub-scales, DCSQ control and ERI reward sub-scales, DCSQ support and ERI reward sub-scales. A weak but negative correlation was found between DCSQ demand and ERI effort sub-scales. Also, a moderate and positive correlation was found between ERI effort and reward sub-scales.

A reasonable correlation among sub-scales suggests that although they are measuring different aspects they are connected. As expected, correlation between DCSQ and ERI suggests that higher the perceived reward, higher the control and support at work. Also, correlation between DCSQ and ERI suggests that higher the perceived demand, lower the effort. We do not have valid reason to explain this relationship, as it is counterintuitive. In addition, as the correlations were weak, these results must be interpreted with caution.

Analysis of Responses to Open-Ended Questions

Of the 71 respondents, 53 and 49 replied to the first and second open-ended questions, respectively. The most common responses to each question were

examined using content analysis. Detailed themes and sub-themes identified are reported in the Appendix. The most common professional issues reported by audiologists and suggestions to overcome those issues are reported in Tables 4 and 5.

Most respondents reported that there was a lack of awareness about the profession of Audiology among public and other professionals (n=25) and about a quarter (n=15) reported that unethical practice in Audiology by other professionals is a concern. They also reported interference by non-Audiology managers and other medical professionals in decision making related to patient care. The other major professional issues reported were related to pay scale not currently in accordance with other professionals. The final concern expressed was that other professionals and government medical hospitals refer to audiologists as technicians.

The common suggestions to overcome some of the professional issues in the field of audiology were to increase awareness of the profession of audiology among public and other professionals (n=18). The other reported suggestions included development and implementation of strict guidelines to prevent

Table 4: Most Common Professional Issues Listed by Respondents

Main themes on professional issues	Number of respondents
Lack of awareness among public and other professionals	25
Unethical practice by other professionals	15
Interference by non-audiology managers and other medical professionals in decision making	11
Pay not in accordance with other professions	8
Inappropriate labelling of Audiologists as 'technicians'	6

Table 5: The Most Common Suggestions Listed by Respondents

Main themes on suggestions for addressing professional issues	Number of respondents
Increase awareness among public and professionals	18
To issue strict guidelines and develop legal framework so that other professionals and unqualified people cannot practice audiology	9
More government jobs need to be created	7
Government should propose pay structure and increase pay scale	7

unqualified or inadequately qualified professionals to practice (n=9), increase in the number of Audiologist jobs in the government sector (n=7), proposing pay structure and increase in pay (n=7).

Findings from qualitative analysis provide valuable insights into professionals' perspective of the issues in audiology profession in India. However, this preliminary attempt was exploratory in nature and hence, an in-depth interview design in future studies may help better understand some of the aspects highlighted in this study. Efforts by professional and regulatory bodies to address the issues raised are necessary. As well, follow-ups are recommended to track if such changes would bring measurable improvements in work environment and professional satisfaction.

STUDY IMPLICATIONS AND LIMITATIONS

Current study provides useful information about audiologists' current working conditions in India. These findings may provide some insights into what measures

are needed to improve working conditions both in terms of policy making, and also in education and training.

To our knowledge, this study is the first of its kind in India. However, it has some limitations such as small sample size, and hence these results must be viewed with caution. Further studies with large sample size are necessary to validate findings of the current study. Due to the recruitment strategy used (i.e., advertisement in Facebook page), response bias may exist. This may have contributed to relatively young audiologists (i.e., average age is 30 years) participating in the survey.

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CONFLICT OF INTEREST

None to declare.

APPENDIX

Main professional issues related to audiologists practice in India	
Awareness & Training	Lack of awareness among public and other professionals No proper training from the institutes Outdated syllabus Relevant topics not taught New graduates are not confident working independently Not enough clinical exposure from educational institutes
Employment and professional interference	No clear professional boundaries Hearing aid manufacturers encouraging other professionals No government jobs Pay is not in accordance with other professions Poor employment prospects & poor job security Diploma holders given priority over Audiologists Audiology practice/decisions intervened by non-audiology managers running the clinics Stressful working situations Lack of further training/continuous professional development

Issues regarding profession and regulatory bodies	Malpractice and unethical practice by other professionals Qualified Audiologists and medical professionals encouraging non-qualified people to practice Audiology Inappropriate labelling of Audiologists as 'Technicians' No unity among the Audiology fraternity No proper respect from other professionals No proper administration by ISHA and RCI in terms of safeguarding profession No proper guidelines about the role of Audiologist i.e. scope of practice Bribery and commissions by audiologists and hearing aid companies to ENTs
Other	Most Audiology professionals do routine Audiology test and hearing aid fitting Need to offer other services like Balance, Electrophysiology and APD.
What need to be done to overcome the main professional issues	
Awareness & training	Increase awareness of the professions among public and professionals Educational institutes should update their syllabus Uniformity among the syllabus taught Uniformity of the course titles (BASLP or BSc Speech and Hearing) Audiology course curriculum should emphasise more on practical training More Speech and Hearing colleges need to be set up Uniformity among the cut off mark for entrance in to the Speech and hearing institutes
Employment & individuality	Define clear professional boundaries Work with other professionals than work under other professionals More government jobs need to be created Government should propose pay structure and increase pay scale Appropriate use of title 'Audiologist' than technician by government/other professionals Employers offering periodic training or supporting Continuous professional development Audiology departments to be head by audiologists than other professionals Audiologist should handle the schemes related to hearing impaired
Issues related to Profession and regulatory bodies	Need to curb malpractice/unethical practice by other professionals Audiologists should stop encouraging non-qualified people to practice Develop integrity and unity among the qualified audiologists To issue strict guidelines and develop legal framework so that other professionals cannot practice audiology Clear distinction of the job titles and duties of Diploma holders and Graduates Use of DR as title Need to have a separate Speech and Hearing council and not under RCI Associations should bring strict rules on hearing aid companies, and audit the clinic setup for service delivery Association should do more than just organising conferences The ISHA panel members need to be changed with more active members Develop a new association which works against the malpractice

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