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Audiologists' preferences for patient-centredness: Differences and similarities among professionals in Portugal, India and Iran

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Abstract

Objective: Patient-centredness has become one of the important aspects of health service delivery, however, a limited number of studies exist that focus on this concept in the domain of hearing healthcare. The objective of this study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. ***Design:*** The study used a cross-sectional survey design and purposive sampling to recruit audiologists' from three different countries. ***Participants:*** A total of 191 fully-completed responses were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). ***Main outcome measure:*** The Patient-Practitioner Orientation Scale. ***Results:*** A significant difference ($p < 0.001$) was found between audiologists' preferences for patient-centredness in three countries. No significant differences were found in terms of age and duration of experience among audiologists from different countries. Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran. ***Conclusion:*** There are difference and similarities in audiologists' preferences for patient-centredness among countries. These findings may have implications to training professionals and also to clinical practice in terms of optimising hearing healthcare across countries.

Key Words

Patient-centeredness, Audiology, hearing healthcare, cross-culture

Summary

Article Focus

- To examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran.

Key Message

- A significant level of difference was found between audiologists' preferences for patient-centredness in three countries.
- Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran.
- These findings may have implications to training professionals and also to clinical practice in terms of optimising hearing healthcare across countries.

Strengths and Weakness

- A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists' distributed across three countries.
- Some variables such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences.

Introduction

There has been an increase in advocacy towards patients' involvement in their health and care delivery, hence the concept 'patient-centredness' has received much attention over the past few decades.[1] Patient-centredness involves aspects such as increased importance placed on patient participation, self-determination of patients in their healthcare, and creation of a power-balanced therapeutic relationship between patients and professionals.[2] Although there has been little consensus over the meaning of this concept universally, patient-centredness has been described with five main dimensions: (1) biopsychosocial perspective; (2) patient as a person; (3) shared power and responsibility; (4) therapeutic alliance; and (5) clinician as a person.[1] Patient-centredness has been suggested to be fundamental part of the successful management of chronic health conditions.[3]

Studies from various areas have suggested that the health professional's preferences towards patient-centredness is important in determining healthcare outcomes and patient satisfaction.[4-7] Issues surrounding patient-centred care have also been linked to malpractice claims,[8] and in general a preference for patient-centeredness seems to correlate well with good clinical practices.[9] It seems therefore that professionals' preference for patient-centred care has significant value in healthcare service delivery in general. Moreover, studies have suggested that audiology patients value interaction with the clinicians. For example, a qualitative study aimed at exploring the shared decision making in adults with acquired hearing impairment suggested that patients wanted rehabilitative audiologists to hear their experiences and preferences and to tailor their interventions accordingly.[10] Hence, patient-centredness is an important area in the area of rehabilitative audiology.

Audiology as a profession has undergone significant changes over last few decades. Some researchers believe that there is a paradigm shift; moving from a focus on the technological aspects of hearing healthcare to a more person-centred approach to rehabilitation.[11 12] There is limited empirical evidence to support these observations of a shift in professionals' preferences and practices, with only a small number of published studies on patient-centredness.[13 14] Nevertheless, studies have suggested a preference for patient-centred healthcare in various disciplines,[15] including in hearing healthcare.[10]

Grenness et al.[13] studied the views of older adults who own hearing aids in order to define patient-centred care specific to audiological rehabilitation. Interviews were conducted with ten older adults with hearing aids, exploring their views and the data were analysed using qualitative content analysis. The results suggested three dimensions: (1) the therapeutic relationship; (2) the players - patient and audiologist; and (3) clinical process, and an overarching theme of individualised care specific to audiological rehabilitation. The reader may refer to a recent literature review by Grenness et al.[13] for further details on patient-centred care in relation to rehabilitative Audiology.

A recent study found that Australian audiologists had a high preference for patient-centredness.[14] Moreover, demographic factors such as age, duration of work experience and employment type (i.e., public/ private) acted as influencing factors towards explaining patient-centredness. For example, older audiologists and those who had practiced longer had a significantly greater preference to patient-centredness when compared to younger and less-experienced audiologists. This is the only published study that has explored audiologists' preferences towards patient-centredness. As a consequence, it is unknown if audiologists in other countries would display similar preferences. Given that Audiology practices vary

considerably across countries,[16] it would be useful to examine audiologists' preferences for patient-centeredness across different countries which vary in terms of culture and healthcare systems.

Cultural competence and patient-centredness are key aspects that could influence healthcare quality.[17] We hypothesise that cultural aspects can influence both patients' and providers' preferences in healthcare and towards patient-centredness. During a recent international seminar on '*Cross-Cultural Communication: Exploring cross-cultural differences and similarities in attitudes towards hearing help-seeking and uptake of hearing aids*' (held in Bristol, UK during February 2013), it was identified that there are few cross-cultural studies in the area of hearing healthcare, and it was recognised that there is an immediate need for further research in this area.[18] Considering the above, we were interested in understanding the audiologists' preference to patient-centredness across cultures.

The aim of the current study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. These countries vary in terms of healthcare system, culture and socio-economic status. However, they were chosen as they all have a minimum educational level requirement of a Bachelor's degree education for Audiologists, and also due to convenience in data collection.

Method

Ethical Considerations

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical

approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Study Design and Participants

The current study used a cross-sectional survey design and purposive sampling to recruit participants. The email mailing list was obtained from university and professional associations which consisted of audiologists distributed throughout each of the three countries. The Patient-Practitioner Orientation Scale (PPOS) questionnaire, with some additional demographics questions (i.e., age, gender, number of years of experience, work set-up, country of origin and country currently practicing), was sent to 260 Audiologists (80 in Portugal, 110 in India and 70 in Iran) via email, requesting them to complete and return back to the researcher by email. Two email reminders were sent for non-respondents after two and four weeks respectively. As the Email ID might have contained some information that may have helped identify the individual, the survey was not fully anonymous. In the interest of keeping the survey short, only limited demographic information was requested and the choice was made to consider the most important aspects based on previous studies.

Questionnaire

The PPOS was developed by Krupat et al.[19] to study physician preferences towards patient-centredness. However, a modified version of the PPOS that has previously been used to study audiologists' preferences towards patient-centredness was used in the current study.[14] This modified version of the PPOS was found to have acceptable internal consistency (α=0.78). This scale has eighteen questions which are scored on a 6-point Likert scale (1 = strongly agree; 6 = strongly disagree). The total score ranges from 18 (most patient-centred) to 108 (most audiologist-centred), and there are two sub-scales: The first nine-item sub-scale,

sharing, reflects the extent to which the respondent believes that patients desire information and should be part of the decision making process (e.g., patients should be treated as if they were partners with the audiologists, equal in power and status). The other nine-item sub-scale, *caring*, reflects the extent to which the respondent sees the patient's expectations, feelings, and life circumstances as critical elements in the treatment process (e.g., a treatment plan cannot succeed if it is in conflict with a patient's lifestyle or values).

An English version of the questionnaire was administered in India. Portuguese and Farsi translated versions were used in Portugal and Iran respectively. The questionnaire translation process was aimed at achieving different language versions of the English instrument that are conceptually equivalent in each of the target countries/cultures. That is, the focus was on cross-cultural and conceptual, rather than on linguistic/literal equivalence. We followed the well accepted forward-translations and back-translations method.[20] This process involved four main stages: forward translation; expert back translation; review and resolution of any discrepancies; and pre-testing with five participants each, in both Portugal and Iran.

Data Analysis

In the first instance, descriptive statistics (i.e., mean, standard deviation), a test of normality and a test of homogeneity of variance were performed. Mean total PPOS scores for audiologists from three countries were compared using an independent one-way analysis of variance (ANOVA). An alpha level of 0.01 was used to determine significance. Bonferroni *post-hoc* analysis was performed to further examine the relationship between groups. Further, a one-way analysis of covariance (ANCOVA) was performed with age and duration of work experience as co-variates in order to exclude the influence of these variables on differences in the group means.

Results

A total of 198 responses (response rate of 76%) were received. This included: 55 responses from Portugal (response rate of 69%); 82 responses from India (response rate of 75%); and 61 responses from Iran (response rate of 87%). However, three responses from Iran (incomplete data) and four responses from India (audiologists currently practicing in a different country) were excluded. A total of 191 responses (i.e., 73%) were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). Table 1 presents the demographic information and Table 2 presents PPOS scores. ANOVA showed no difference between groups in terms of age [F (2, 188) = 2.13, p = 0.121] and also duration of work experience [F (2, 188) = 1.16, p = 0.313].

[Table 1 near here]

[Table 2 near here]

Data for both full-scale and subscales were found to be normally distributed (based on Kolmogorov-Smirnov test and visual examination of histograms). Homogeneity of variances (based on Levene's test) was found for *caring* and *total mean* (p = 0.625 and 0.129 respectively) and not for *sharing* (p = 0.020). Since our data were found to be normally distributed, we elected to use ANOVA for our analysis, despite the fact that homogeneity of variances could not be assumed for the *sharing* subscale. A robust procedures (Welch and Brown-Forsythe) test was performed to check ANOVA findings (see Table 3), which indicated the same significant differences between group means (p < 0.001 in all cases).

[Table 3 near here]

The PPOS mean scores were tested for differences between countries using a one way between-subjects ANOVA (see Table 4). A significant result was found for *sharing* subscale [F (2, 188) = 39.76], *caring* subscale [F (2, 188) = 24.61] and the *full* scale [F (2, 188) = 42.49]. Further, Bonferroni *post-hoc* test showed that the difference between Portugal and India and also Portugal and Iran were significant for *sharing* subscale, *caring* subscale and *full* scale (p = 0.001, 0.001 and 0.001 respectively). However, the difference between India and Iran were not statistically significant for *sharing* subscale, *caring* subscale and *full* scale (p = 0.171, 0.841 and 1.0 respectively).

[Table 4 near here]

These results strongly suggest that there are some differences and some similarities in audiologists' preferences towards patient-centredness from different countries (see Figure 1). Audiologists in Portugal had significantly greater preference for patient-centredness when compared to audiologists in India and Iran whose preferences did not differ much.

[Figure 1 near here]

Whilst no significant differences were observed between the populations with respect to age and experience, this does not exclude some possible influence of these variables on the data. To exclude this, we elected to include these variables as covariates, and assess if this had an influence on the main effect observed: The data met the necessary assumptions (i.e., linearity, homoscedasticity and homogeneity of regression slopes) and the ANCOVA results with age and duration of work experience as covariates and PPOS scores as dependent variable gave results consistent with the ANOVA, with a significant main effect for the full scale and

subscales, and with no significant interaction effect seen. This suggests that difference exists between the groups in preference for patient-centredness, even after accounting for age and duration of work experience.

Discussion

This study examined and compared audiologists' preferences for patient-centredness in Portugal, India and Iran. The PPOS scores indicate the self-reported preference for aspects of patient-centredness. The study results, as expected, suggest some differences and some similarities in preferences for patient-centredness among audiologists from Portugal (M = 4.2; SD = 0.5), India (M = 3.5; SD = 0.6) and Iran (M = 3.4; SD = 0.4). Generally, audiologists' in Portugal had a high preference for patient-centredness, when compared to audiologists in India and Iran. Moreover, a recent study found that Australian audiologists[14] have high preference for patient-centredness (M = 4.46; SD = 0.52), which is similar to Portugal audiologists' preferences reported in the current study.

From examination of the responses to each item it appears that audiologists' preferences for patient -centredness seem to vary from one situation to other situation. For example, mean PPOS score 2.4 in *item 1* when compared to 4.8 in *item 7* (see Table 2). Similar results have been reported in a recent Australian study.[14] Moreover, the trend for higher PPOS scores provided by audiologists from Portugal compared to their peers from India and Iran, was true for almost all questionnaire *items* when analysed individually. This suggests that the differences in preference for patient centredness are consistent across a variety of situations.

Studies from other disciplines have shown that the PPOS scores indicating preference for patient-centredness can vary among professionals in different countries. For example,

medical practitioners' mean PPOS scores of 4.8 in the USA,[4] compared to 3.3 in Greece.[21] Moreover, the differences in PPOS scores have also been observed across medical specialists.[5] For example, general practitioners and oncology physicians had higher PPOS mean scores (i.e., 4.3 and 5.0 respectively) when compared with physicians with a surgical background (i.e., 2.9). Thus it appears that the training route and specific duties of the professional could be considered as factors in determining patient-centred practice, as could the local culture (see later discussion).

Other posited potential influences on audiologists' preferences for patient centredness are age, duration of work experience and employment type.[14] In the current study no significant differences existed between groups in terms of age and duration of work experience. The distribution of audiologists among different areas of employment was broadly similar between countries. However, differences were noted in terms of participants' gender between countries. The estimates of male/female ratio practicing in Audiology in these countries, as indicated by the professional bodies, are 1:4, 1:2 and 1:2 in Portugal, India and Iran respectively. The current study sample had a similar gender pattern of audiologists even though not exactly matching these ratios. Gender has been found to influence the practitioners' preference for patient-centredness with women displaying a high preference to patient-centredness than male counterparts,[22 23] although it was not a significant factor for audiologists preferences for patient-centred in a large scale Australian study.[14] Hence, further exploration of a gender effect in preference for patient-centredness is necessary in future studies.

The local healthcare system, national culture, organisational-related factors (see Grenness et al.[2]), ethnicity[24] and cross-cultural aspects[25] as indicated in studies from other areas may have

contributed to the differences and similarities noted in the current study results. We hypothesise that one of the main contributing factors could be the '*culture*'. Geert Hofstede defines culture as *'the collective programming of the mind distinguishing the members of one group or category of people from another'*.[26] Figure 2 represents Hofstede's dimensions of national culture in Portugal, India and Iran, which include: power distance; individualism; masculinity; uncertainty avoidance; pragmatism; and indulgence.[26] A greater number of similarities are noticed between India and Iran when compared to Portugal (e.g., individualism, masculinity and uncertainty avoidance). These observations may provide some explanation about how the culture may have contributed to differences and similarities in preferences for patient-centredness noticed among different countries. This may also highlight the need for cultural competency for professionals in order to deliver patient-centred care.[27]

[Figure 2 near here]

It is important to note that the current study focused on self-reported preferences for patient-centredness and not the actual clinical behaviour. Previous studies have suggested that the preferences for patient-centredness measured using PPOS correlate well with the actual clinical behaviour of professionals as measured by verbal exchange between patients and professionals.[9] However, not much is known about the patients' preferences for hearing healthcare services and more importantly for 'patient-centred healthcare' within these countries. Further studies with a qualitative design may help explore these aspects.

Study Implications and Future Directions

Patient-centredness is important in healthcare as it is linked to patient-outcomes such as increased satisfaction, adherence and health outcomes[28 29] and also to perceived quality of

service delivery.[17] Considering that there is evidence that rehabilitative Audiology patients also prefer patient-centred care,[10] this concept has direct clinical implications in hearing healthcare.

The current study reports some interesting findings about audiologists' preference to patient-centredness in different countries. Extrapolating from the above discussion, we may suggest that the patients in Portugal may have better outcomes when compared to patients in India and Iran as the Portugal audiologists had high preference for patient-centredness when compared to audiologists in India and Iran. However, it might be more appropriate to study patient-centredness of professionals in congruence with patients .[4] For example, although the mean scores in India and Iran were much less when compared to Portugal, if the patients in India and Iran have similar preferences for patient-centredness as the professionals then, the care delivery is likely to meet patients' expectations. Further, it would be useful and important to understand how the concept of patient-centredness is understood and valued by both professionals and patients in different countries. If future studies (focussing on both professionals and patients) suggest marked differences, similar to those demonstrated here, it may be necessary to reconceptualise the principle of patient-centredness.

Given that patient-centredness has been found to be an important factor in patient satisfaction and outcomes, at least in some countries, and since it has been suggested that clinicians can learn to become patient-centred,[30] it may be necessary to include such concepts in training programmes, particularly in cases where practitioners demonstrate a significantly lower preference towards patient-centredness than their patients. Moreover, future studies may also focus on understanding the differences and similarities in preferences towards patient-centredness among sub-cultures within the same country (e.g., different ethnic groups). Such

studies may shed some light into arguments of researchers who have been advocating the need for cultural competence in the delivery of healthcare services.[31] Moreover, this may have consequences for the increasingly international Audiology workforce,[16] both in terms of the migration of audiologists to other countries for better job prospects and the provision of distance-learning models of education. Overall, this information may highlight the need for optimising hearing healthcare globally.

Strengths and Limitations

A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists' distributed across three countries. Nevertheless, the study has some limitations. For example, aspects such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences. However, there was a reasonable spread of audiologist practicing in public and private Audiology clinics, and audiologists in all three countries were trained to a minimum standard of a Bachelor's degree. A relatively small sample size and lack of anonymity in data collection were also limitations of the current study.

Conclusion

The data described here are the first in hearing healthcare to demonstrate specific differences and similarities in audiologists' preferences for patient-centeredness across countries. Various factors such as gender, healthcare system, organisational-related factors, ethnicity and cross-cultural aspects may have contributed to these differences and similarities noticed. These findings may have implications to training professionals and also to clinical practice in terms of optimising hearing healthcare across countries.

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Contributors

VM - Contributed to most parts of the work including data collection, analysis and writing; PG - Contributed to data analysis, interpretation and write up; DT - Contributed to data collection and write up; TA - Contributed to data collection and write up; KR - Contributed to data collection and write up.

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No funding was received to conduct this study.

Ethical Approval

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Data Sharing

No additional data are available.

Conflict of interests

None.

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Tables

Table 1: Demographic information

	All participants (n=191)	Portugal (n=55)	India (n=78)	Iran (n=58)
Age in years (Mean±SD)	30.9±8.4	31.0±8.4	29.6±8.6	32.5±8.0
Gender (%)				
▪ Male	37	20	55	30
▪ Female	63	80	45	70
Work set-up (%)				
▪ Clinic public	35	23	39	41
▪ Clinic private	50	51	61	33
▪ Clinic both	12	15	0	26
▪ Education	1	2	0	0
▪ Not known	2	9	0	0
Education (%)				
▪ Bachelors	47	72	18	60
▪ Masters	48	22	74	40
▪ Doctorate	5	6	8	0
Work experience in years (Mean±SD)	7.2±8.1	7.8±8.2	6.1±8.8	8.1±6.5

Table 2: Modified patient practitioner orientation scale (PPOS): Mean scores and standard deviation

	All participants (n=191)	Portugal (n=55)	India (n=78)	Iran (n=58)
PPOS Items (Mean±SD)				
1. The audiologist is the one who should decide what gets talked about during an appointment.	2.4±1.1	2.4±1.2	2.3±1.2	2.5±1.2
2. Although health care is less personal these days, this is a small price to pay for audiological advances.	3.0±1.4	4.3±1.2	2.7±1.2	2.1±1.0
3. The most important part of the standard audiological appointment is the hearing test.	2.7±1.4	3.4±1.2	2.5±1.5	2.3±1.1
4. It is often best for clients if they do not have the full explanation of their audiological condition.	4.6±1.3	5.0±1.0	4.5±1.5	4.2±1.3
5. Clients should rely on their audiologists' knowledge and not try to find out about their conditions on their own.	3.2±1.7	4.2±1.4	3.4±1.6	2.0±1.3
6. When audiologists ask a lot of questions about a client's background, they are prying too much into personal matters.	4.4±1.3	5.0±1.0	4.0±1.3	4.2±1.4
7. If audiologists are truly good at diagnosis and treatment, the way they relate to clients is not that important.	4.8±1.2	5.5±0.7	4.4±1.3	4.6±1.2
8. Many clients continue asking questions even though they are not learning anything new.	3.2±1.2	3.4±1.2	3.2±1.2	3.0±1.2
9. Clients should be treated as if they were partners with the audiologist, equal in power and status.*	4.1±1.6	4.7±1.6	3.7±1.5	4.0±1.5
10. Clients generally want reassurance rather than information about their audiological condition.	2.8±1.1	3.3±1.0	2.7±1.1	2.5±1.1
11. If an audiologist's primary tools are being open and warm, the audiologist will not have a lot of success.	4.3±1.4	4.6±1.1	3.8±1.4	4.6±1.3

12. When clients disagree with their audiologist, this is a sign that the audiologist does not have the client's respect and trust.	3.8±1.2	4.6±1.0	3.7±1.1	3.1±1.2
13. A management plan cannot succeed if it is in conflict with a client's lifestyle or values.*	4.7±1.1	4.7±1.1	4.6±1.0	4.7±1.2
14. Most clients want to get in and out of the audiologist's office as quickly as possible.	3.5±1.4	4.4±1.2	3.3±1.2	2.9±1.3
15. The client must always be aware that the audiologist is in charge.	2.6±1.3	2.7±1.2	2.4±1.1	2.9±1.5
16. It is not that important to know a client's culture and background in order to treat the client's audiological condition.	4.6±1.3	5.3±0.9	4.3±1.4	4.6±1.2
17. Humour is a major ingredient in the audiologist's management of the client.*	4.1±1.3	4.8±1.0	3.8±1.3	3.8±1.4
18. When clients look up audiological information on their own, this usually confuses more than it helps.	2.9±1.3	2.6±1.0	2.8±1.4	3.4±1.3
PPOS Scales (Mean±SD)				
▪ Full scale	3.6±0.6	4.2±0.5	3.5±0.6	3.4±0.4
▪ Sharing subscale	3.6±0.7	4.2±0.6	3.4±0.7	3.2±0.5
▪ Caring subscale	3.7±0.6	4.1±0.5	3.5±0.5	3.6±0.5

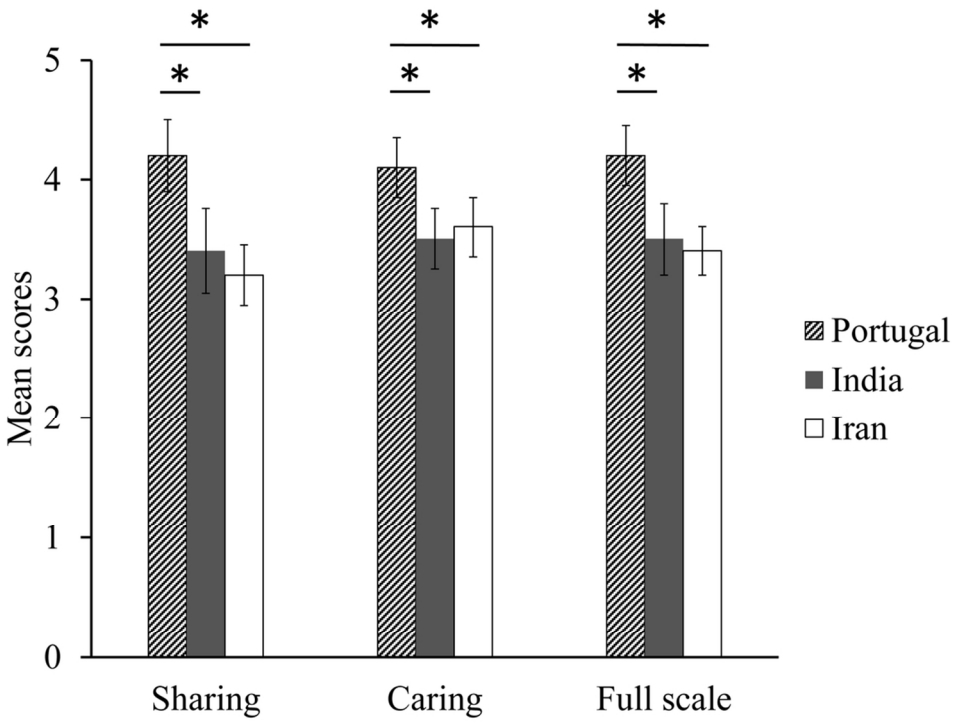
Note: Score of 1 (strongly agree) = most clinician-centred; Score of 6 (strongly disagree) = most patient-centred. Items 9, 13 and 17 (*) are reversely worded items which were reverse scored.

Table 3: Robust tests of equality of means between countries

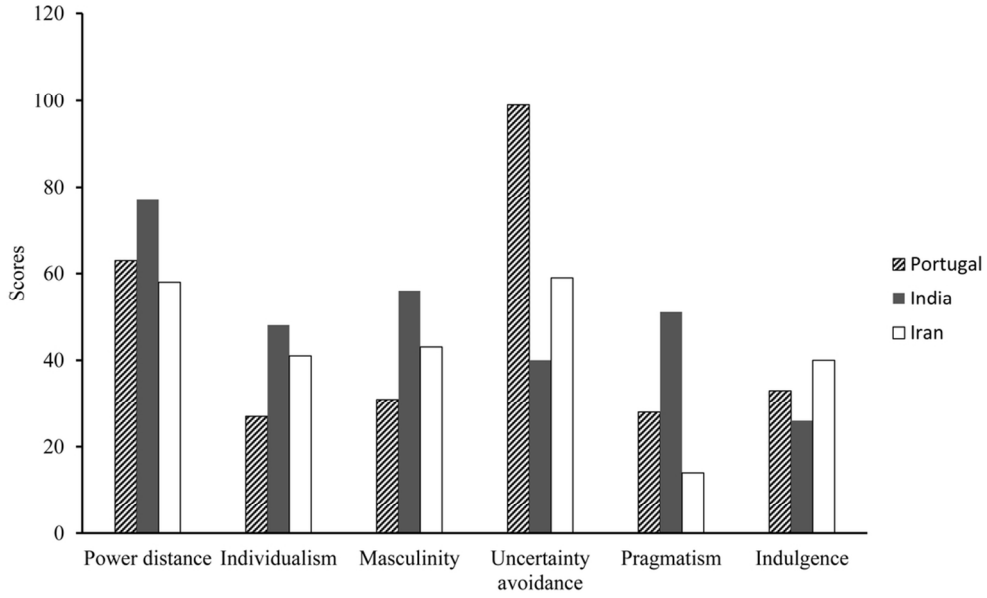
	Welch			Brown-Forsythe		
	Degree of freedom	**F-test**	**P**	**Degree of freedom**	**F-test**	**P**
Sharing	122.38	46.39	< 0.001	183.46	42.14	< 0.001
Caring	119.83	27.56	< 0.001	178.20	24.86	< 0.001
Full scale	122.81	47.64	< 0.001	186.33	44.78	< 0.001

Table 4: Differences in audiologists' preferences for patient-centredness between countries

	Degree of freedom	F-test	P
Sharing	2	39.76	< 0.001
Caring	2	24.61	< 0.001
Full scale	2	42.49	< 0.001



Scores for the 'Sharing' and 'Caring' subscales and the Full scale averaged across respondents for the PPOS questionnaire completed by Audiologists' in Portugal, India and Iran. Error bars represent 1 standard deviation:
102x76mm (300 x 300 DPI)



Scores (y-axis) measured for Hofstede's dimensions of national culture (x-axis) in Portugal, India and Iran.
99x61mm (300 x 300 DPI)

STROBE 2007 (v4) checklist of items to be included in reports of observational studies in epidemiology*
Checklist for cohort, case-control, and cross-sectional studies (combined)

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2 & 3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4 – 6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7 – 8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7 - 8
Bias	9	Describe any efforts to address potential sources of bias	7 & 15
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	NA
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	8
		(*e*) Describe any sensitivity analyses	8
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9 & 21
		(b) Indicate number of participants with missing data for each variable of interest	NA
Outcome data	15*	Report numbers of outcome events or summary measures	9 - 11
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9 - 11
		(*b*) Report category boundaries when continuous variables were categorized	9 - 11
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	9 - 11
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	9 - 11
Discussion			
Key results	18	Summarise key results with reference to study objectives	11 - 13
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	13 - 15
Generalisability	21	Discuss the generalisability (external validity) of the study results	13 - 15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	16

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Audiologists' preferences for patient-centredness: A cross-sectional questionnaire study of cross-cultural differences and similarities among professionals in Portugal, India and Iran

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Audiologists' preferences for patient-centredness: A cross-sectional questionnaire study of cross-cultural differences and similarities among professionals in Portugal, India and Iran

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Key Words

Patient-centeredness, Audiology, hearing healthcare, cross-culture

Abstract

Objective: Patient-centredness has become one of the important aspects of health service delivery, however, a limited number of studies exist that focus on this concept in the domain of hearing healthcare. The objective of this study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran.

Design: The study used a cross-sectional survey design with audiologists recruited from three different countries.

Participants: A total of 191 fully-completed responses were included in the analysis (55 from Portugal, 78 from India and 58 from Iran).

Main outcome measure: The Patient-Practitioner Orientation Scale.

Results: Patient-Practitioner Orientation Scale mean scores suggest that Audiologists have a preference for patient-centredness (i.e., mean of 3.6 in 5 point scale). However, marked differences were observed between specific PPOS items suggesting these preferences vary across clinical situations. A significant level of difference ($p < 0.001$) was found between audiologists' preferences for patient-centredness in three countries. Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran, although no significant differences were found in terms of age and duration of experience among these sample populations.

Conclusion: There are differences and similarities in audiologists' preferences for patient-centredness among countries. These findings may have implications for the training of professionals and also for clinical practice in terms of optimising hearing healthcare across countries.

Summary

Article Focus

- To examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran.

Key Message

- A significant level of difference was found between audiologists' preferences for patient-centredness in three countries.
- Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran.
- These findings may have implications for the training of professionals and for clinical practice in terms of optimising hearing healthcare across countries.

Strengths and Weakness

- A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists distributed across three countries.
- Some variables such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences.
- A sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire.
- The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response.

Introduction

There has been an increase in advocacy towards patients' involvement in their health and care delivery, hence the concept 'patient-centredness' has received much attention over the past few decades.[1] Patient-centredness involves aspects such as increased importance placed on patient participation, self-determination of patients in their healthcare, and the creation of a power-balanced therapeutic relationship between patients and professionals.[2] Although there has been little consensus over the meaning of this concept universally, patient-centredness has been described with five main dimensions: (1) biopsychosocial perspective; (2) patient as a person; (3) shared power and responsibility; (4) therapeutic alliance; and (5) clinician as a person.[1] Patient-centredness has been suggested to be fundamental part of the successful management of chronic health conditions.[3]

Studies from a variety of areas of healthcare have suggested that the health professional's preferences towards patient-centredness is important in determining outcomes and patient satisfaction.[4-7] Issues surrounding patient-centred care have also been linked to malpractice claims,[8] and in general a preference for patient-centeredness correlates well with good clinical practices.[9] .

The profession of Audiology is particularly interesting in this context since, traditionally, there has been a focus on the technological aspects of hearing healthcare. Some researchers believe that the last two decades has seen a paradigm shift; moving from a focus on the technological aspects of hearing healthcare to a more person-centred approach to rehabilitation.[10 11] . The empirical evidence for this shift is limited, with only a small number of published studies on patient-centredness specific to audiology.[12 13.] Laplante-Lévesque et al

conducted a qualitative study, exploring shared decision making in adults with acquired hearing impairment, which suggested that patients wanted rehabilitative audiologists to hear their experiences and preferences and to tailor their interventions accordingly.[14] Poost-Foroosh et al.[15] studied the factors in the interaction between Audiologists and clients in the decision to purchase a hearing aid. The study asked twelve clients with acquired hearing loss and ten audiologists, from both University and private practices, to supply statements regarding which clinician-patient factors they felt influenced the decision to purchase a hearing aid. Client-centred interaction was identified as one of two major themes in the responses provided (client-empowerment was the other).

Grenness et al.[12] studied the views of older adults who own hearing aids in order to further define patient-centred care in the context of audiological rehabilitation. Interviews were conducted with ten older adults with hearing aids, exploring their views and the data were analysed using qualitative content analysis. The results suggested three dimensions: (1) the therapeutic relationship; (2) the players - patient and audiologist; and (3) the clinical process, and an overarching theme of individualised care specific to audiological rehabilitation. In each case, the research discussed above demonstrates the significant value that patients place in the relationship with the clinician. The reader is referred to a recent literature review by Grenness et al.[2] for further details on patient-centred care in relation to rehabilitative Audiology.

A recent study focussing specifically on Audiologists in Australia found a high preference for patient-centredness.[13] Moreover, demographic factors such as age, duration of work experience and employment type (i.e., public/ private) acted as influencing factors towards explaining patient-centredness. For example, older audiologists and those who had practiced

longer had a significantly greater preference to patient-centredness when compared to younger and less-experienced audiologists. This is the only published study that has explicitly explored audiologists' preferences towards patient-centredness. As a consequence, it is unknown if audiologists in other countries would display similar preferences. Given that Audiology practices vary considerably across countries,[16] it would be useful to examine audiologists' preferences for patient-centeredness across different countries which vary in terms of culture and healthcare systems. Moreover; it has been highlighted in general that there are few cross-cultural studies in the area of hearing healthcare, highlighting the need for such studies.

Cultural competence is a key aspect that is known to influence healthcare quality [17 18]. We hypothesise that cultural aspects can influence both patients' and providers' preferences in healthcare and towards patient-centredness. We were particularly interested in understanding and comparing the preferences for patient-centeredness among Audiologists in European and Asian countries. Asian countries, compared to European countries, are considered to be more collectivist societies, with a greater emphasis placed on the role of the individual as part of a local group and/or community with less of a tendency to focus on 'looking after oneself'. Further to this, it has been posited that Asian countries have a tendency towards a high 'power distance' within levels of organisations – this reflects how willing the less powerful members of an organisation or group are to accept an unequal distribution of power. In the context of patient-centredness such cultural effects might result in different opinions towards a hierarchical 'paternalistic' approach to audiological management, versus a patient centred-approach.

The aim of the current study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. These countries vary in terms of healthcare system, culture and socio-economic status. However, they were chosen as they all have a minimum educational level requirement of a Bachelor's degree education for Audiologists, and also due to convenience in data collection.

Method

Ethical Considerations

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Study Design and Participants

The current study used a cross-sectional survey design and purposive sampling to recruit participants. The email mailing list was obtained from university and professional associations which consisted of audiologists distributed throughout each of the three countries. The Patient-Practitioner Orientation Scale (PPOS) questionnaire, with some additional demographics questions (i.e., age, gender, number of years of experience, work set-up, country of origin and country in which currently practicing), was sent to 260 Audiologists (80 in Portugal, 110 in India and 70 in Iran) via email, requesting them to complete and return back to the researcher by email. Two email reminders were sent for non-respondents after two and four weeks respectively. As the Email ID might have contained some information that may have helped identify the individual, the survey was not fully anonymous. In the interest of keeping the survey short, only limited demographic information

was requested and the choice was made to consider the most important aspects based on previous studies.

Questionnaire

The PPOS was developed by Krupat et al.[19] to study physician preferences towards patient-centredness. However, a modified version of the PPOS that has previously been used to study audiologists' preferences towards patient-centredness was used in the current study.[13] This modified version of the PPOS was found to have acceptable internal consistency (α=0.78). This scale has eighteen questions which are scored on a 6-point Likert scale (1 = strongly agree; 6 = strongly disagree). The total score ranges from 18 (most patient-centred) to 108 (most audiologist-centred), and there are two sub-scales: The first nine-item sub-scale, *sharing*, reflects the extent to which the respondent believes that patients desire information and should be part of the decision making process (e.g., patients should be treated as if they were partners with the audiologists, equal in power and status). The other nine-item sub-scale, *caring*, reflects the extent to which the respondent sees the patient's expectations, feelings, and life circumstances as critical elements in the treatment process (e.g., a treatment plan cannot succeed if it is in conflict with a patient's lifestyle or values).

An English version of the questionnaire was administered in India. Portuguese and Farsi translated versions were used in Portugal and Iran respectively. The questionnaire translation process was aimed at achieving different language versions of the English instrument that are conceptually equivalent in each of the target countries/cultures. That is, the focus was on cross-cultural and conceptual, rather than on linguistic/literal equivalence. We followed the well accepted forward-translations and back-translations method.[20] This process involved

four main stages: forward translation; expert back translation; review and resolution of any discrepancies; and pre-testing with five participants each, in both Portugal and Iran.

Data Analysis

In the first instance, descriptive statistics (i.e., mean, standard deviation), a test of normality and a test of homogeneity of variance were performed. Mean total PPOS scores for audiologists from three countries were compared using an independent one-way analysis of variance (ANOVA). An alpha level of 0.01 was used to determine significance. Bonferroni *post-hoc* analysis was performed to further examine the relationship between groups. Further, a one-way analysis of covariance (ANCOVA) was performed with age and duration of work experience as covariates in order to exclude the influence of these variables on the observed differences between the group means.

Results

A total of 198 responses (response rate of 76%) were received. This included: 55 responses from Portugal (response rate of 69%); 82 responses from India (response rate of 75%); and 61 responses from Iran (response rate of 87%). However, three responses from Iran (incomplete data) and four responses from India (audiologists currently practicing in a different country) were excluded. A total of 191 responses (i.e., 73%) were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). Table 1 presents the demographic information and Table 2 presents PPOS scores. ANOVA showed no difference between groups in terms of age [F (2, 188) = 2.13, p = 0.121] and also duration of work experience [F (2, 188) = 1.16, p = 0.313].

[Table 1 near here]

[Table 2 near here]

Data for both full-scale and subscales were found to be normally distributed (based on Kolmogorov-Smirnov test and visual examination of histograms). Homogeneity of variances (based on Levene's test) was found for *caring* and *total mean* ($p = 0.625$ and 0.129 respectively) and not for *sharing* ($p = 0.020$). Since our data were found to be normally distributed, we elected to use ANOVA for our analysis, despite the fact that homogeneity of variances could not be assumed for the *sharing* subscale. A robust procedures (Welch and Brown-Forsythe) test was performed to check ANOVA findings which indicated the same significant differences between group means ($p < 0.001$ in all cases).

The PPOS mean scores from each population were analysed using a one way between-subjects ANOVA (see Table 3). A significant result was found for *sharing* subscale [F (2, 188) = 39.76], *caring* subscale [F (2, 188) = 24.61] and the *full* scale [F (2, 188) = 42.49]. Further, *post-hoc* tests with Bonferroni correction showed that the difference between Portugal and India and also Portugal and Iran were significant for *sharing* subscale, *caring* subscale and *full* scale ($p = 0.001$, 0.001 and 0.001 respectively). However, the difference between India and Iran were not statistically significant for the *sharing* subscale, *caring* subscale and *full* scale ($p = 0.171$, p=0.841 and p=1respectively).

[Table 3 near here]

These results show some differences and some similarities in audiologists' preferences towards patient-centredness from different countries (see Figure 1). Audiologists in Portugal had significantly greater preference for patient-centredness when compared to audiologists in India and Iran whose preferences did not differ much.

[Figure 1 near here]

Whilst our sample populations were well matched, with no significant differences with respect to age and experience, this does not exclude some possible influence of these variables on the data. Therefore we elected to include these variables as covariates, and assess if this had an influence on the main effect observed: The data met the necessary assumptions (i.e., linearity, homoscedasticity and homogeneity of regression slopes) and the ANCOVA results with age and duration of work experience as covariates and PPOS scores as dependent variable gave results consistent with the ANOVA, with a significant main effect for the full scale and subscales only and no significant interaction was observed. Thus we conclude that differences exist between the responses from audiologists from these countries in preference for patient-centredness, even after accounting for age and duration of work experience.

Discussion

This study examined and compared audiologists' preferences for patient-centredness in Portugal, India and Iran. The PPOS scores indicate the self-reported preference for aspects of patient-centredness. An overall mean score greater than 3 for all three countries included suggests that there is a tendency for Audiologists to favour patient-centredness, rather than a clinician-centred approach. This is true for both *caring* and *sharing* subscales. These values can be compared to those observed across other medical specialities.[5] For example, general practitioners and oncology physicians had higher PPOS mean scores (i.e., 4.3 and 5.0 respectively) when compared with physicians with a surgical background (i.e., 2.9). Thus it appears that the training route and specific duties of the professional could be considered as factors in determining patient-centred practice.

From examination of the responses to each item it can be seen that audiologists' preferences for patient-centredness vary depending upon the situation described (see Table 2). There is some grouping of item responses, for example, mean PPOS score 2.4 in *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), 2.7 in *item 2* (i.e., most important part of the standard audiological appointment is the hearing test), 2.8 in *item 10* (i.e., clients generally want reassurance rather than information about their audiological condition) and 2.6 in *item 15* (i.e., client must always be aware that the audiologist is in charge). These were markedly lower than the mean PPOS scores of 4.6 in *item 4* (i.e., it is often best for clients if they do not have the full explanation of their audiological condition), 4.8 in *item 7* (i.e., if audiologists are truly good at diagnosis and treatment, the way they relate to clients is not that important) and 4.7 in *item 13* (i.e., a management plan cannot succeed if it is in conflict with a client's lifestyle or values). Similar results have been reported in a recent Australian study.[14] These observations suggest that the preference for patient centredness is consistent across particular situations. Generally, audiologists prefer more control during the clinical appointment and like to decide what information has the priority of discussion and also prefer to have audiological tests as the central focus of the clinical appointment. This maybe because of the fact that traditionally audiological practice had a greater emphasis on technology and many audiologists followed more of a prescriptive approach to management. However, some researchers suggest that there is a growing trend towards audiological practice with more emphasis on client-centred rehabilitation.[10, 11] Therefore; it may be useful to monitor Audiologists preferences for patient-centredness over time.

The study results suggest some country-specific differences and some similarities in preferences for patient-centredness among audiologists from Portugal (M = 4.2; SD = 0.5),

India (*M* = 3.5; SD = 0.6) and Iran (*M* = 3.4; SD = 0.4). Generally, audiologists' in Portugal had a high preference for patient-centredness, when compared to audiologists in India and Iran. Moreover, a recent study found that Australian audiologists[14] have high preference for patient-centredness (*M* = 4.46; SD = 0.52), which is similar to Portugal audiologists' preferences reported in the current study.

When comparing scores across countries the trend for higher PPOS scores provided by audiologists from Portugal compared to their peers from India and Iran, was true for almost all questionnaire items when analysed individually. However, some variations exist. For example, scores for *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), was similar among audiologists in all three countries. This might reflect a similarity in service delivery that place restricted time allowances on clinical session that would encourage the Audiologist to keep conversation 'on task'. Scores for *item 18* (i.e., when clients look up audiological information on their own, this usually confuses more than it helps) followed the reverse trend with audiologists in India and Iran scoring higher than audiologists in Portugal, albeit by relatively small differences in score. In this case, the ability of the patient population to find relevant information may be related to local factors such as internet access and language-specific information resources. *Item 2* had the largest difference in score between Portugal and the other two countries (i.e., Although health care is less personal these days, this is a small price to pay for audiological advances). The responses could have been influenced by how the respondent views recent audiological advances. Improvements in technology have occurred at different times in different countries, and therefore it may be that audiologist's responses are reflecting their opinion on which technological advancements they feel have helped clients, as much reflecting their opinion on

the changing personal aspect of healthcare. An example would be if the move from analogue to digital technology was more recent for India and Iran; this may be valued more highly against a loss of the personal involvement in healthcare than in Portugal, if this development had occurred further in the past. .

Studies from other disciplines have shown that the PPOS scores indicating preference for patient-centredness can vary among professionals in different countries. For example, medical practitioners' mean PPOS scores of 4.8 in the USA,[4] compared to 3.3 in Greece.[21],

The key influencing factors for the differences observed are the local healthcare system, national culture, organisational-related factors (see Grenness et al.[2]), ethnicity[22] and cross-cultural aspects[23] as indicated in studies from other areas. We hypothesise that one of the main contributing factors could be the '*culture*'. Geert Hofstede defines culture as *'the collective programming of the mind distinguishing the members of one group or category of people from another'*.[24] Figure 2 represents Hofstede's dimensions of national culture in Portugal, India and Iran, which include: power distance; individualism; masculinity; uncertainty avoidance; pragmatism; and indulgence.[24] A greater number of similarities are noticed between India and Iran when compared to Portugal (e.g., individualism, masculinity and uncertainty avoidance). These observations are consistent with a contribution of culture to differences and similarities in preferences for patient-centredness noticed among different countries in this study. It would also be consistent with the previously reported findings of medical practitioners from the USA, a country with a very high score of Individualism, compared to Greece, considered to be a collectivist culture. Given this finding, we argue that there is a need for increased focus on cultural competency for professionals in order to deliver patient-centred care.[25]

[Figure 2 near here]

It is important to note that the current study focused on self-reported preferences for patient-centredness and not the actual clinical behaviour. Previous studies have suggested that the preferences for patient-centredness measured using PPOS correlate well with the actual clinical behaviour of professionals as measured by verbal exchange between patients and professionals.[9] However, not much is known about the patients' preferences for hearing healthcare services and more importantly for 'patient-centred healthcare' within these countries. Further studies with a qualitative design may help explore these aspects. A further consideration is to what extent the clinician population will reflect the general 'culture' that is assigned to a nation- it is likely that they vary from the general population with regards educational level in addition to other socioeconomic factors, and the degree of difference is likely to be specific to the particular profession, and also country being considered. However, we also consider it unlikely that there is no influence of country-specific cultural factors on the clinician population at all.

Other potential influences on audiologists' preferences for patient centredness are age, duration of work experience and employment type.[13] In the current study no significant differences existed between groups in terms of age and duration of work experience. The distribution of audiologists among different areas of employment was broadly similar between countries. However, differences were noted in terms of participants' gender between countries. The estimates of male/female ratio practicing in Audiology in these countries, as indicated by the professional bodies, are 1:4, 1:2 and 1:2 in Portugal, India and Iran respectively. The current study sample had a similar gender pattern of audiologists even though not exactly matching these ratios. Gender has been found to influence the

practitioners' preference for patient-centredness with women displaying a greater preference for patient-centredness than male counterparts,[26 27] although this was not found to be a significant factor for audiologists' preferences for patient-centredness in a large scale Australian study.[13] Hence, further exploration of a gender effect in preference for patient-centredness is necessary in future studies.

Study Implications and Future Directions

Patient-centredness is important in healthcare as it is linked to patient-outcomes such as increased satisfaction, adherence and health outcomes[28 29] and also to perceived quality of service delivery.[18] Considering that there is evidence that rehabilitative Audiology patients also prefer patient-centred care,[14] this concept has direct clinical implications in hearing healthcare.

The current study reports some interesting findings about audiologists' preference to patient-centredness in different countries. Extrapolating from the above discussion, we may suggest that the patients in Portugal may have better outcomes when compared to patients in India and Iran as the Portugal audiologists had high preference for patient-centredness when compared to audiologists in India and Iran. However, it might be more appropriate to study patient-centredness of professionals in congruence with patients .[4] For example, although the mean scores in India and Iran were lower than those of Portugal, if the patients in India and Iran have similar preferences for patient-centredness as the professionals then, the care delivery is likely to meet patients' expectations. Further, it would be useful and important to understand how the concept of patient-centredness is understood and valued by both professionals and patients in different countries. If future studies (focussing on both

professionals and patients) suggest marked differences, similar to those demonstrated here, it may be necessary to reconceptualise the principle of patient-centredness.

Given that patient-centredness has been found to be an important factor in patient satisfaction and outcomes, at least in some countries, and since it has been suggested that clinicians can learn to become patient-centred,[30] it may be necessary to include such concepts in training programmes, particularly in cases where practitioners demonstrate a significantly lower preference towards patient-centredness than their patients. Moreover, future studies may also focus on understanding the differences and similarities in preferences towards patient-centredness among sub-cultures within the same country (e.g., different ethnic groups). Such studies may shed some light into arguments of researchers who have been advocating the need for cultural competence in the delivery of healthcare services.[31] Moreover; this may have consequences for the increasingly international Audiology workforce,[16] both in terms of the migration of audiologists to other countries for better job prospects and the provision of distance-learning models of education. Overall, this information may highlight the need for optimising hearing healthcare globally.

Strengths and Limitations

A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists' distributed across three countries. Nevertheless, the study has some limitations. For example, aspects such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences. However, there was a reasonable spread of audiologist practicing in public and private Audiology clinics, and audiologists in all three countries were trained to a minimum standard of a Bachelor's degree. A relatively small

sample size and lack of anonymity in data collection were also limitations of the current study. We were aware that a sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire. The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response. These biases would have been present for all countries.

Conclusion

The data described here are the first in hearing healthcare to demonstrate specific differences and similarities in audiologists' preferences for patient-centeredness across three countries. We observed that the two countries with the most similar cultural profile had the most similar preference level for patient-centred care. There are several factors might influence preference for patient centred-practice, and further investigation is required in order to determine the role of the education and healthcare system, organisational-related factors, and ethnicity in contributing to the differences and similarities noticed. Clinician reported Patient-centredness and the cultural aspects of the clinician and patient population are different across countries and this may have implications for the training professionals and implementation of clinical practice in terms of optimising hearing healthcare across countries.

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Contributors

VM - Contributed to most parts of the work including data collection, analysis and writing; PG - Contributed to data analysis, interpretation and write up; DT - Contributed to data collection and write up; TA - Contributed to data collection and write up; KR - Contributed to data collection and write up.

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Ethical Approval

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Data Sharing

No additional data are available.

Conflict of interests

None.

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Tables

Table 1: Demographic information

	All participants (n=191)	Portugal (n=55)	India (n=78)	Iran (n=58)
Age in years (Mean±SD)	30.9±8.4	31.0±8.4	29.6±8.6	32.5±8.0
Gender (%)				
▪ Male	37	20	55	30
▪ Female	63	80	45	70
Work set-up (%)				
▪ Clinic public	35	23	39	41
▪ Clinic private	50	51	61	33
▪ Clinic both	12	15	0	26
▪ Education	1	2	0	0
▪ Not known	2	9	0	0
Education (%)				
▪ Bachelors	47	72	18	60
▪ Masters	48	22	74	40
▪ Doctorate	5	6	8	0
Work experience in years (Mean±SD)	7.2±8.1	7.8±8.2	6.1±8.8	8.1±6.5

Table 2: Modified patient practitioner orientation scale (PPOS): Mean scores and standard deviation

	All participants (n=191)	Portugal (n=55)	India (n=78)	Iran (n=58)
PPOS Items (Mean±SD)				
1. The audiologist is the one who should decide what gets talked about during an appointment.	2.4±1.1	2.4±1.2	2.3±1.2	2.5±1.2
2. Although health care is less personal these days, this is a small price to pay for audiological advances.	3.0±1.4	4.3±1.2	2.7±1.2	2.1±1.0
3. The most important part of the standard audiological appointment is the hearing test.	2.7±1.4	3.4±1.2	2.5±1.5	2.3±1.1
4. It is often best for clients if they do not have the full explanation of their audiological condition.	4.6±1.3	5.0±1.0	4.5±1.5	4.2±1.3
5. Clients should rely on their audiologists' knowledge and not try to find out about their conditions on their own.	3.2±1.7	4.2±1.4	3.4±1.6	2.0±1.3
6. When audiologists ask a lot of questions about a client's background, they are prying too much into personal matters.	4.4±1.3	5.0±1.0	4.0±1.3	4.2±1.4
7. If audiologists are truly good at diagnosis and treatment, the way they relate to clients is not that important.	4.8±1.2	5.5±0.7	4.4±1.3	4.6±1.2
8. Many clients continue asking questions even though they are not learning anything new.	3.2±1.2	3.4±1.2	3.2±1.2	3.0±1.2
9. Clients should be treated as if they were partners with the audiologist, equal in power and status.*	4.1±1.6	4.7±1.6	3.7±1.5	4.0±1.5
10. Clients generally want reassurance rather than information about their audiological condition.	2.8±1.1	3.3±1.0	2.7±1.1	2.5±1.1
11. If an audiologist's primary tools are being open and warm, the audiologist will not have a lot of success.	4.3±1.4	4.6±1.1	3.8±1.4	4.6±1.3

12. When clients disagree with their audiologist, this is a sign that the audiologist does not have the client's respect and trust.	3.8±1.2	4.6±1.0	3.7±1.1	3.1±1.2
13. A management plan cannot succeed if it is in conflict with a client's lifestyle or values.*	4.7±1.1	4.7±1.1	4.6±1.0	4.7±1.2
14. Most clients want to get in and out of the audiologist's office as quickly as possible.	3.5±1.4	4.4±1.2	3.3±1.2	2.9±1.3
15. The client must always be aware that the audiologist is in charge.	2.6±1.3	2.7±1.2	2.4±1.1	2.9±1.5
16. It is not that important to know a client's culture and background in order to treat the client's audiological condition.	4.6±1.3	5.3±0.9	4.3±1.4	4.6±1.2
17. Humour is a major ingredient in the audiologist's management of the client.*	4.1±1.3	4.8±1.0	3.8±1.3	3.8±1.4
18. When clients look up audiological information on their own, this usually confuses more than it helps.	2.9±1.3	2.6±1.0	2.8±1.4	3.4±1.3
PPOS Scales (Mean±SD)				
▪ Full scale	3.6±0.6	4.2±0.5	3.5±0.6	3.4±0.4
▪ Sharing subscale	3.6±0.7	4.2±0.6	3.4±0.7	3.2±0.5
▪ Caring subscale	3.7±0.6	4.1±0.5	3.5±0.5	3.6±0.5

Note: Score of 1 (strongly agree) = most clinician-centred; Score of 6 (strongly disagree) = most patient-centred. Items 9, 13 and 17 (*) are reversely worded items which were reverse scored.

Table 3: Differences in audiologists' preferences for patient-centredness between countries

	Degree of freedom	F-test	P
Sharing	2	39.76	< 0.001
Caring	2	24.61	< 0.001
Full scale	2	42.49	< 0.001

FIGURE LEGENDS:

FIGURE 1: Bar Graphs showing the mean total PPOS Score ('Full Scale'), and the mean PPOS Score for the 'Sharing' and 'Caring' Subscales for Audiologists from Portugal, India and Iran. (*) indicates a significant difference (P<0.01)

FIGURE 2: Bar graph showing Hofstede's cultural dimension values for Portugal, India and Iran. A high score power distance expresses that the less powerful members of a society accept and expect that power is distributed unequally. A high score on Individualism vs Collectivism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. A high score on 'Masculinity vs Femininity' suggests a preference in society for achievement, heroism, assertiveness and material rewards for success as opposed to cooperation, modesty, caring for the weak and quality of life. A high score on 'Uncertainty Avoidance' suggests members of a society feel uncomfortable with uncertainty and ambiguity. A high score on 'Pragmatism suggets the society encourages thrift and efforts in modern education as a way to prepare for the future, as opposed to relying on time-honoured traditions. A high score on 'Indulgence' suggests the society follows gratification of basic and natural human drives related to enjoying life and having fun, as opposed to restrain in such activities based on social norms.

Audiologists' preferences for patient-centredness: A cross-sectional questionnaire study of cross-cultural differences and similarities among professionals in Portugal, India and Iran

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Abstract

Objective: Patient-centredness has become one of the important aspects of health service delivery, however, a limited number of studies exist that focus on this concept in the domain of hearing healthcare. The objective of this study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. ***Design:*** The study used a cross-sectional survey design with audiologists recruited from three different countries. ***Participants:*** A total of 191 fully-completed responses were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). ***Main outcome measure:*** The Patient-Practitioner Orientation Scale. ***Results:*** Patient-Practitioner Orientation Scale mean scores suggest that Audiologists have a preference for patient-centredness (i.e., mean of 3.6 in 5 point scale). However, marked differences were observed between specific PPOS items suggesting these preferences vary across clinical situations. A significant level of difference ($p < 0.001$) was found between audiologists' preferences for patient-centredness in three countries. Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran, although no significant differences were found in terms of age and duration of experience among these sample populations. ***Conclusion:*** There are differences and similarities in audiologists' preferences for patient-centredness among countries. These findings may have implications for the training of professionals and also for clinical practice in terms of optimising hearing healthcare across countries.

Key Words

Patient-centeredness, Audiology, hearing healthcare, cross-culture

Summary

Article Focus

- To examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran.

Key Message

- A significant level of difference was found between audiologists' preferences for patient-centredness in three countries.
- Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran.
- These findings may have implications for the training of professionals and for clinical practice in terms of optimising hearing healthcare across countries.

Strengths and Weakness

- A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists distributed across three countries.
- Some variables such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences.
- A sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire.
- The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response.

Introduction

There has been an increase in advocacy towards patients' involvement in their health and care delivery, hence the concept 'patient-centredness' has received much attention over the past few decades.[1] Patient-centredness involves aspects such as increased importance placed on patient participation, self-determination of patients in their healthcare, and the creation of a power-balanced therapeutic relationship between patients and professionals.[2] Although there has been little consensus over the meaning of this concept universally, patient-centredness has been described with five main dimensions: (1) biopsychosocial perspective; (2) patient as a person; (3) shared power and responsibility; (4) therapeutic alliance; and (5) clinician as a person.[1] Patient-centredness has been suggested to be fundamental part of the successful management of chronic health conditions.[3]

Studies from a variety of areas of healthcare have suggested that the health professional's preferences towards patient-centredness is important in determining outcomes and patient satisfaction.[4-7] Issues surrounding patient-centred care have also been linked to malpractice claims,[8] and in general a preference for patient-centeredness correlates well with good clinical practices.[9] .

The profession of Audiology is particularly interesting in this context since, traditionally, there has been a focus on the technological aspects of hearing healthcare. Some researchers believe that the last two decades has seen a paradigm shift; moving from a focus on the technological aspects of hearing healthcare to a more person-centred approach to rehabilitation.[10 11] . The empirical evidence for this shift is limited, with only a small number of published studies on patient-centredness specific to audiology.[12 13.] Laplante-Lévesque et al

conducted a qualitative study, exploring shared decision making in adults with acquired hearing impairment, which suggested that patients wanted rehabilitative audiologists to hear their experiences and preferences and to tailor their interventions accordingly.[14] Poost-Foroosh et al.[15] studied the factors in the interaction between Audiologists and clients in the decision to purchase a hearing aid. The study asked twelve clients with acquired hearing loss and ten audiologists, from both University and private practices, to supply statements regarding which clinician-patient factors they felt influenced the decision to purchase a hearing aid. Client-centred interaction was identified as one of two major themes in the responses provided (client-empowerment was the other).

Grenness et al.[12] studied the views of older adults who own hearing aids in order to further define patient-centred care in the context of audiological rehabilitation. Interviews were conducted with ten older adults with hearing aids, exploring their views and the data were analysed using qualitative content analysis. The results suggested three dimensions: (1) the therapeutic relationship; (2) the players - patient and audiologist; and (3) the clinical process, and an overarching theme of individualised care specific to audiological rehabilitation. In each case, the research discussed above demonstrates the significant value that patients place in the relationship with the clinician. The reader is referred to a recent literature review by Grenness et al.[2] for further details on patient-centred care in relation to rehabilitative Audiology.

A recent study focussing specifically on Audiologists in Australia found a high preference for patient-centredness.[13] Moreover, demographic factors such as age, duration of work experience and employment type (i.e., public/ private) acted as influencing factors towards explaining patient-centredness. For example, older audiologists and those who had practiced

longer had a significantly greater preference to patient-centredness when compared to younger and less-experienced audiologists. This is the only published study that has explicitly explored audiologists' preferences towards patient-centredness. As a consequence, it is unknown if audiologists in other countries would display similar preferences. Given that Audiology practices vary considerably across countries,[16] it would be useful to examine audiologists' preferences for patient-centeredness across different countries which vary in terms of culture and healthcare systems. Moreover, it has been highlighted in general that there are few cross-cultural studies in the area of hearing healthcare, highlighting the need for such studies [18]

Cultural competence is a key aspect that is known to influence healthcare quality [17 18]. We hypothesise that cultural aspects can influence both patients' and providers' preferences in healthcare and towards patient-centredness. We were particularly interested in understanding and comparing the preferences for patient-centeredness among Audiologists in European and Asian countries. Asian countries, compared to European countries, are considered to be more collectivist societies, with a greater emphasis placed on the role of the individual as part of a local group and/or community with less of a tendency to focus on 'looking after oneself'. Further to this, it has been posited that Asian countries have a tendency towards a high 'power distance' within levels of organisations – this reflects how willing the less powerful members of an organisation or group are to accept an unequal distribution of power. In the context of patient-centredness such cultural effects might result in different opinions towards a hierarchical 'paternalistic' approach to audiological management, versus a patient centred-approach.

The aim of the current study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. These countries vary in terms of healthcare system, culture and socio-economic status. However, they were chosen as they all have a minimum educational level requirement of a Bachelor's degree education for Audiologists, and also due to convenience in data collection.

Method

Ethical Considerations

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Study Design and Participants

The current study used a cross-sectional survey design and purposive sampling to recruit participants. The email mailing list was obtained from university and professional associations which consisted of audiologists distributed throughout each of the three countries. The Patient-Practitioner Orientation Scale (PPOS) questionnaire, with some additional demographics questions (i.e., age, gender, number of years of experience, work set-up, country of origin and country in which currently practicing), was sent to 260 Audiologists (80 in Portugal, 110 in India and 70 in Iran) via email, requesting them to complete and return back to the researcher by email. Two email reminders were sent for non-respondents after two and four weeks respectively. As the Email ID might have contained some information that may have helped identify the individual, the survey was not fully

anonymous. In the interest of keeping the survey short, only limited demographic information was requested and the choice was made to consider the most important aspects based on previous studies.

Questionnaire

The PPOS was developed by Krupat et al.[19] to study physician preferences towards patient-centredness. However, a modified version of the PPOS that has previously been used to study audiologists' preferences towards patient-centredness was used in the current study.[13] This modified version of the PPOS was found to have acceptable internal consistency (α=0.78). This scale has eighteen questions which are scored on a 6-point Likert scale (1 = strongly agree; 6 = strongly disagree). The total score ranges from 18 (most patient-centred) to 108 (most audiologist-centred), and there are two sub-scales: The first nine-item sub-scale, *sharing*, reflects the extent to which the respondent believes that patients desire information and should be part of the decision making process (e.g., patients should be treated as if they were partners with the audiologists, equal in power and status). The other nine-item sub-scale, *caring*, reflects the extent to which the respondent sees the patient's expectations, feelings, and life circumstances as critical elements in the treatment process (e.g., a treatment plan cannot succeed if it is in conflict with a patient's lifestyle or values).

An English version of the questionnaire was administered in India. Portuguese and Farsi translated versions were used in Portugal and Iran respectively. The questionnaire translation process was aimed at achieving different language versions of the English instrument that are conceptually equivalent in each of the target countries/cultures. That is, the focus was on cross-cultural and conceptual, rather than on linguistic/literal equivalence. We followed the well accepted forward-translations and back-translations method.[20] This process involved

four main stages: forward translation; expert back translation; review and resolution of any discrepancies; and pre-testing with five participants each, in both Portugal and Iran.

Data Analysis

In the first instance, descriptive statistics (i.e., mean, standard deviation), a test of normality and a test of homogeneity of variance were performed. Mean total PPOS scores for audiologists from three countries were compared using an independent one-way analysis of variance (ANOVA). An alpha level of 0.01 was used to determine significance. Bonferroni *post-hoc* analysis was performed to further examine the relationship between groups. Further, a one-way analysis of covariance (ANCOVA) was performed with age and duration of work experience as covariates in order to exclude the influence of these variables on the observed differences between the group means.

Results

A total of 198 responses (response rate of 76%) were received. This included: 55 responses from Portugal (response rate of 69%); 82 responses from India (response rate of 75%); and 61 responses from Iran (response rate of 87%). However, three responses from Iran (incomplete data) and four responses from India (audiologists currently practicing in a different country) were excluded. A total of 191 responses (i.e., 73%) were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). Table 1 presents the demographic information and Table 2 presents PPOS scores. ANOVA showed no difference between groups in terms of age [F (2, 188) = 2.13, p = 0.121] and also duration of work experience [F (2, 188) = 1.16, p = 0.313].

[Table 1 near here]

[Table 2 near here]

Data for both full-scale and subscales were found to be normally distributed (based on Kolmogorov-Smirnov test and visual examination of histograms). Homogeneity of variances (based on Levene's test) was found for *caring* and *total mean* ($p = 0.625$ and 0.129 respectively) and not for *sharing* ($p = 0.020$). Since our data were found to be normally distributed, we elected to use ANOVA for our analysis, despite the fact that homogeneity of variances could not be assumed for the *sharing* subscale. A robust procedures (Welch and Brown-Forsythe) test was performed to check ANOVA findings which indicated the same significant differences between group means ($p < 0.001$ in all cases).

The PPOS mean scores from each population were analysed using a one way between-subjects ANOVA (see Table 3). A significant result was found for *sharing* subscale [F (2, 188) = 39.76], *caring* subscale [F (2, 188) = 24.61] and the *full* scale [F (2, 188) = 42.49]. Further, *post-hoc* tests with Bonferroni correction showed that the difference between Portugal and India and also Portugal and Iran were significant for *sharing* subscale, *caring* subscale and *full* scale ($p = 0.001$, 0.001 and 0.001 respectively). However, the difference between India and Iran were not statistically significant for the *sharing* subscale, *caring* subscale and *full* scale ($p = 0.171$, p=0.841 and p=1respectively).

[Table 3 near here]

These results show some differences and some similarities in audiologists' preferences towards patient-centredness from different countries (see Figure 1). Audiologists in Portugal had significantly greater preference for patient-centredness when compared to audiologists in India and Iran whose preferences did not differ much.

[Figure 1 near here]

Whilst our sample populations were well matched, with no significant differences with respect to age and experience, this does not exclude some possible influence of these variables on the data. Therefore we elected to include these variables as covariates, and assess if this had an influence on the main effect observed: The data met the necessary assumptions (i.e., linearity, homoscedasticity and homogeneity of regression slopes) and the ANCOVA results with age and duration of work experience as covariates and PPOS scores as dependent variable gave results consistent with the ANOVA, with a significant main effect for the full scale and subscales only and no significant interaction was observed. Thus we conclude that differences exist between the responses from audiologists from these countries in preference for patient-centredness, even after accounting for age and duration of work experience.

Discussion

This study examined and compared audiologists' preferences for patient-centredness in Portugal, India and Iran. The PPOS scores indicate the self-reported preference for aspects of patient-centredness. An overall mean score greater than 3 for all three countries included suggests that there is a tendency for Audiologists to favour patient-centredness, rather than a clinician-centred approach. This is true for both *caring* and *sharing* subscales. These values can be compared to those observed across other medical specialities.[5] For example, general practitioners and oncology physicians had higher PPOS mean scores (i.e., 4.3 and 5.0 respectively) when compared with physicians with a surgical background (i.e., 2.9). Thus it appears that the training route and specific duties of the professional could be considered as factors in determining patient-centred practice.

From examination of the responses to each item it can be seen that audiologists' preferences for patient-centredness vary depending upon the situation described (see Table 2). There is some grouping of item responses, for example, mean PPOS score 2.4 in *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), 2.7 in *item 2* (i.e., most important part of the standard audiological appointment is the hearing test), 2.8 in *item 10* (i.e., clients generally want reassurance rather than information about their audiological condition) and 2.6 in *item 15* (i.e., client must always be aware that the audiologist is in charge). These were markedly lower than the mean PPOS scores of 4.6 in *item 4* (i.e., it is often best for clients if they do not have the full explanation of their audiological condition), 4.8 in *item 7* (i.e., if audiologists are truly good at diagnosis and treatment, the way they relate to clients is not that important) and 4.7 in *item 13* (i.e., a management plan cannot succeed if it is in conflict with a client's lifestyle or values). Similar results have been reported in a recent Australian study.[14] These observations suggest that the preference for patient centredness is consistent across particular situations. Generally, audiologists prefer more control during the clinical appointment and like to decide what information has the priority of discussion and also prefer to have audiological tests as the central focus of the clinical appointment. This maybe because of the fact that traditionally audiological practice had a greater emphasis on technology and many audiologists followed more of a prescriptive approach to management. However, some researchers suggest that there is a growing trend towards audiological practice with more emphasis on client-centred rehabilitation.[10, 11] Therefore; it may be useful to monitor Audiologists preferences for patient-centredness over time.

The study results suggest some country-specific differences and some similarities in preferences for patient-centredness among audiologists from Portugal (M = 4.2; SD = 0.5),

India (M = 3.5; SD = 0.6) and Iran (M = 3.4; SD = 0.4). Generally, audiologists' in Portugal had a high preference for patient-centredness, when compared to audiologists in India and Iran. Moreover, a recent study found that Australian audiologists[14] have high preference for patient-centredness (M = 4.46; SD = 0.52), which is similar to Portugal audiologists' preferences reported in the current study.

When comparing scores across countries the trend for higher PPOS scores provided by audiologists from Portugal compared to their peers from India and Iran, was true for almost all questionnaire items when analysed individually. However, some variations exist. For example, scores for *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), was similar among audiologists in all three countries. This might reflect a similarity in service delivery that place restricted time allowances on clinical session that would encourage the Audiologist to keep conversation 'on task'. Scores for *item 18* (i.e., when clients look up audiological information on their own, this usually confuses more than it helps) followed the reverse trend with audiologists in India and Iran scoring higher than audiologists in Portugal, albeit by relatively small differences in score. In this case, the ability of the patient population to find relevant information may be related to local factors such as internet access and language-specific information resources. *Item 2* had the largest difference in score between Portugal and the other two countries (i.e., Although health care is less personal these days, this is a small price to pay for audiological advances). The responses could have been influenced by how the respondent views recent audiological advances. Improvements in technology have occurred at different times in different countries, and therefore it may be that audiologist's responses are reflecting their opinion on which technological advancements they feel have helped clients, as much reflecting their opinion on

the changing personal aspect of healthcare. An example would be if the move from analogue to digital technology was more recent for India and Iran; this may be valued more highly against a loss of the personal involvement in healthcare than in Portugal, if this development had occurred further in the past. .

Studies from other disciplines have shown that the PPOS scores indicating preference for patient-centredness can vary among professionals in different countries. For example, medical practitioners' mean PPOS scores of 4.8 in the USA,[4] compared to 3.3 in Greece.[21],

The key influencing factors for the differences observed are the local healthcare system, national culture, organisational-related factors (see Grenness et al.[2]), ethnicity[22] and cross-cultural aspects[23] as indicated in studies from other areas. We hypothesise that one of the main contributing factors could be the '*culture*'. Geert Hofstede defines culture as *'the collective programming of the mind distinguishing the members of one group or category of people from another'*.[24] Figure 2 represents Hofstede's dimensions of national culture in Portugal, India and Iran, which include: power distance; individualism; masculinity; uncertainty avoidance; pragmatism; and indulgence.[24] A greater number of similarities are noticed between India and Iran when compared to Portugal (e.g., individualism, masculinity and uncertainty avoidance). These observations are consistent with a contribution of culture to differences and similarities in preferences for patient-centredness noticed among different countries in this study. It would also be consistent with the previously reported findings of medical practitioners from the USA, a country with a very high score of Individualism, compared to Greece, considered to be a collectivist culture. Given this finding, we argue that there is a need for increased focus on cultural competency for professionals in order to deliver patient-centred care.[25]

[Figure 2 near here]

It is important to note that the current study focused on self-reported preferences for patient-centredness and not the actual clinical behaviour. Previous studies have suggested that the preferences for patient-centredness measured using PPOS correlate well with the actual clinical behaviour of professionals as measured by verbal exchange between patients and professionals.[9] However, not much is known about the patients' preferences for hearing healthcare services and more importantly for 'patient-centred healthcare' within these countries. Further studies with a qualitative design may help explore these aspects. A further consideration is to what extent the clinician population will reflect the general 'culture' that is assigned to a nation- it is likely that they vary from the general population with regards educational level in addition to other socioeconomic factors, and the degree of difference is likely to be specific to the particular profession, and also country being considered. However, we also consider it unlikely that there is no influence of country-specific cultural factors on the clinician population at all.

Other potential influences on audiologists' preferences for patient centredness are age, duration of work experience and employment type.[13] In the current study no significant differences existed between groups in terms of age and duration of work experience. The distribution of audiologists among different areas of employment was broadly similar between countries. However, differences were noted in terms of participants' gender between countries. The estimates of male/female ratio practicing in Audiology in these countries, as indicated by the professional bodies, are 1:4, 1:2 and 1:2 in Portugal, India and Iran respectively. The current study sample had a similar gender pattern of audiologists even though not exactly matching these ratios. Gender has been found to influence the

practitioners' preference for patient-centredness with women displaying a greater preference for patient-centredness than male counterparts,[26 27] although this was not found to be a significant factor for audiologists' preferences for patient-centredness in a large scale Australian study.[13] Hence, further exploration of a gender effect in preference for patient-centredness is necessary in future studies.

Study Implications and Future Directions

Patient-centredness is important in healthcare as it is linked to patient-outcomes such as increased satisfaction, adherence and health outcomes[28 29] and also to perceived quality of service delivery.[18] Considering that there is evidence that rehabilitative Audiology patients also prefer patient-centred care,[14] this concept has direct clinical implications in hearing healthcare.

The current study reports some interesting findings about audiologists' preference to patient-centredness in different countries. Extrapolating from the above discussion, we may suggest that the patients in Portugal may have better outcomes when compared to patients in India and Iran as the Portugal audiologists had high preference for patient-centredness when compared to audiologists in India and Iran. However, it might be more appropriate to study patient-centredness of professionals in congruence with patients .[4] For example, although the mean scores in India and Iran were lower than those of Portugal, if the patients in India and Iran have similar preferences for patient-centredness as the professionals then, the care delivery is likely to meet patients' expectations. Further, it would be useful and important to understand how the concept of patient-centredness is understood and valued by both professionals and patients in different countries. If future studies (focussing on both

professionals and patients) suggest marked differences, similar to those demonstrated here, it may be necessary to reconceptualise the principle of patient-centredness.

Given that patient-centredness has been found to be an important factor in patient satisfaction and outcomes, at least in some countries, and since it has been suggested that clinicians can learn to become patient-centred,[30] it may be necessary to include such concepts in training programmes, particularly in cases where practitioners demonstrate a significantly lower preference towards patient-centredness than their patients. Moreover, future studies may also focus on understanding the differences and similarities in preferences towards patient-centredness among sub-cultures within the same country (e.g., different ethnic groups). Such studies may shed some light into arguments of researchers who have been advocating the need for cultural competence in the delivery of healthcare services.[31] Moreover; this may have consequences for the increasingly international Audiology workforce,[16] both in terms of the migration of audiologists to other countries for better job prospects and the provision of distance-learning models of education. Overall, this information may highlight the need for optimising hearing healthcare globally.

Strengths and Limitations

A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists' distributed across three countries. Nevertheless, the study has some limitations. For example, aspects such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences. However, there was a reasonable spread of audiologist practicing in public and private Audiology clinics, and audiologists in all three countries were trained to a minimum standard of a Bachelor's degree. A relatively small

sample size and lack of anonymity in data collection were also limitations of the current study. We were aware that a sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire. The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response. These biases would have been present for all countries.

Conclusion

The data described here are the first in hearing healthcare to demonstrate specific differences and similarities in audiologists' preferences for patient-centeredness across three countries. We observed that the two countries with the most similar cultural profile had the most similar preference level for patient-centred care. There are several factors might influence preference for patient centred-practice, and further investigation is required in order to determine the role of the education and healthcare system, organisational-related factors, and ethnicity in contributing to the differences and similarities noticed. Clinician reported Patient-centredness and the cultural aspects of the clinician and patient population are different across countries and this may have implications for the training professionals and implementation of clinical practice in terms of optimising hearing healthcare across countries.

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Contributors

VM - Contributed to most parts of the work including data collection, analysis and writing; PG - Contributed to data analysis, interpretation and write up; DT - Contributed to data collection and write up; TA - Contributed to data collection and write up; KR - Contributed to data collection and write up.

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Ethical Approval

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Data Sharing

No additional data are available.

Conflict of interests

None.

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Tables

Table 1: Demographic information

	All participants (n=191)	Portugal (n=55)	India (n=78)	Iran (n=58)
Age in years (Mean±SD)	30.9±8.4	31.0±8.4	29.6±8.6	32.5±8.0
Gender (%)				
▪ Male	37	20	55	30
▪ Female	63	80	45	70
Work set-up (%)				
▪ Clinic public	35	23	39	41
▪ Clinic private	50	51	61	33
▪ Clinic both	12	15	0	26
▪ Education	1	2	0	0
▪ Not known	2	9	0	0
Education (%)				
▪ Bachelors	47	72	18	60
▪ Masters	48	22	74	40
▪ Doctorate	5	6	8	0
Work experience in years (Mean±SD)	7.2±8.1	7.8±8.2	6.1±8.8	8.1±6.5

Table 2: Modified patient practitioner orientation scale (PPOS): Mean scores and standard deviation

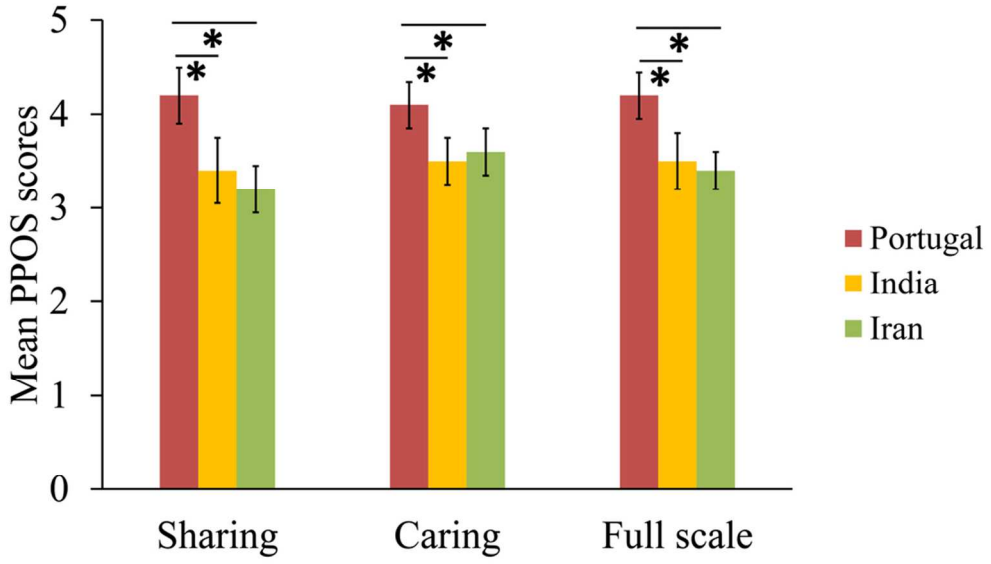
	All participants (n=191)	Portugal (n=55)	India (n=78)	Iran (n=58)
PPOS Items (Mean±SD)				
1. The audiologist is the one who should decide what gets talked about during an appointment.	2.4±1.1	2.4±1.2	2.3±1.2	2.5±1.2
2. Although health care is less personal these days, this is a small price to pay for audiological advances.	3.0±1.4	4.3±1.2	2.7±1.2	2.1±1.0
3. The most important part of the standard audiological appointment is the hearing test.	2.7±1.4	3.4±1.2	2.5±1.5	2.3±1.1
4. It is often best for clients if they do not have the full explanation of their audiological condition.	4.6±1.3	5.0±1.0	4.5±1.5	4.2±1.3
5. Clients should rely on their audiologists' knowledge and not try to find out about their conditions on their own.	3.2±1.7	4.2±1.4	3.4±1.6	2.0±1.3
6. When audiologists ask a lot of questions about a client's background, they are prying too much into personal matters.	4.4±1.3	5.0±1.0	4.0±1.3	4.2±1.4
7. If audiologists are truly good at diagnosis and treatment, the way they relate to clients is not that important.	4.8±1.2	5.5±0.7	4.4±1.3	4.6±1.2
8. Many clients continue asking questions even though they are not learning anything new.	3.2±1.2	3.4±1.2	3.2±1.2	3.0±1.2
9. Clients should be treated as if they were partners with the audiologist, equal in power and status.*	4.1±1.6	4.7±1.6	3.7±1.5	4.0±1.5
10. Clients generally want reassurance rather than information about their audiological condition.	2.8±1.1	3.3±1.0	2.7±1.1	2.5±1.1
11. If an audiologist's primary tools are being open and warm, the audiologist will not have a lot of success.	4.3±1.4	4.6±1.1	3.8±1.4	4.6±1.3

12. When clients disagree with their audiologist, this is a sign that the audiologist does not have the client's respect and trust.	3.8±1.2	4.6±1.0	3.7±1.1	3.1±1.2
13. A management plan cannot succeed if it is in conflict with a client's lifestyle or values.*	4.7±1.1	4.7±1.1	4.6±1.0	4.7±1.2
14. Most clients want to get in and out of the audiologist's office as quickly as possible.	3.5±1.4	4.4±1.2	3.3±1.2	2.9±1.3
15. The client must always be aware that the audiologist is in charge.	2.6±1.3	2.7±1.2	2.4±1.1	2.9±1.5
16. It is not that important to know a client's culture and background in order to treat the client's audiological condition.	4.6±1.3	5.3±0.9	4.3±1.4	4.6±1.2
17. Humour is a major ingredient in the audiologist's management of the client.*	4.1±1.3	4.8±1.0	3.8±1.3	3.8±1.4
18. When clients look up audiological information on their own, this usually confuses more than it helps.	2.9±1.3	2.6±1.0	2.8±1.4	3.4±1.3
PPOS Scales (Mean±SD)				
▪ Full scale	3.6±0.6	4.2±0.5	3.5±0.6	3.4±0.4
▪ Sharing subscale	3.6±0.7	4.2±0.6	3.4±0.7	3.2±0.5
▪ Caring subscale	3.7±0.6	4.1±0.5	3.5±0.5	3.6±0.5

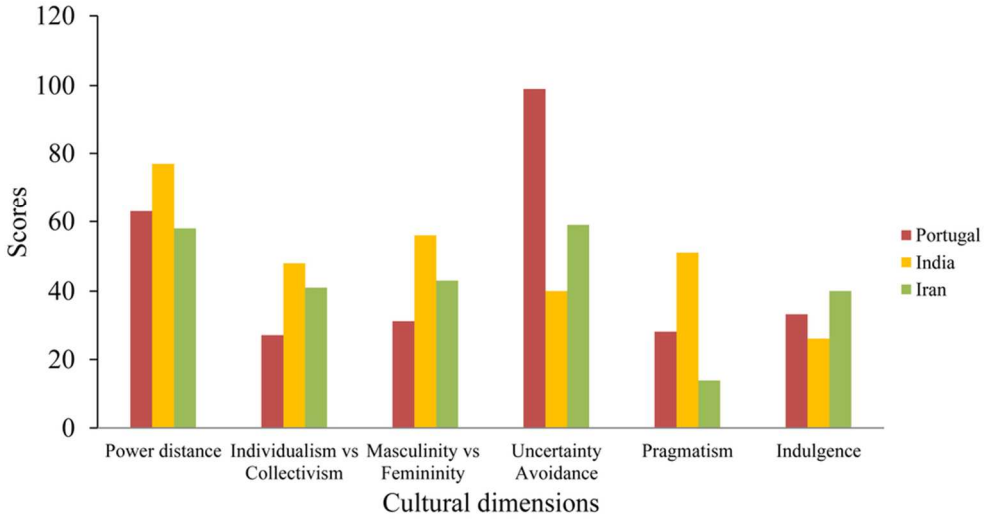
Note: Score of 1 (strongly agree) = most clinician-centred; Score of 6 (strongly disagree) = most patient-centred. Items 9, 13 and 17 (*) are reversely worded items which were reverse scored.

Table 3: Differences in audiologists' preferences for patient-centredness between countries

	Degree of freedom	F-test	P
Sharing	2	39.76	< 0.001
Caring	2	24.61	< 0.001
Full scale	2	42.49	< 0.001



Bar Graphs showing the mean total PPOS Score ('Full Scale'), and the mean PPOS Score for the 'Sharing' and 'Caring' Subscales for Audiologists from Portugal, India and Iran. (*) indicates a significant difference (P<0.01)
92x52mm (300 x 300 DPI)



Bar graph showing Hofstede's cultural dimension values for Portugal, India and Iran. A high score power distance expresses that the less powerful members of a society accept and expect that power is distributed unequally. A high score on Individualism vs Collectivism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. A high score on 'Masculinity vs Femininity' suggests a preference in society for achievement, heroism, assertiveness and material rewards for success as opposed to cooperation, modesty, caring for the weak and quality of life. A high score on 'Uncertainty Avoidance' suggests members of a society feel uncomfortable with uncertainty and ambiguity. A high score on 'Pragmatism suggets the society encourages thrift and efforts in modern education as a way to prepare for the future, as opposed to relying on time-honoured traditions. A high score on 'Indulgence' suggests the society follows gratification of basic and natural human drives related to enjoying life and having fun, as opposed to restrain in such activities based on social norms.
90x47mm (300 x 300 DPI)

STROBE 2007 (v4) checklist of items to be included in reports of observational studies in epidemiology*

Checklist for cohort, case-control, and cross-sectional studies (combined)

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2 & 3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4 – 6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7 – 8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7 - 8
Bias	9	Describe any efforts to address potential sources of bias	7 & 15
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	NA
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	8
		(*e*) Describe any sensitivity analyses	8
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9 & 21
		(b) Indicate number of participants with missing data for each variable of interest	NA
Outcome data	15*	Report numbers of outcome events or summary measures	9 - 11
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9 - 11
		(*b*) Report category boundaries when continuous variables were categorized	9 - 11
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	9 - 11
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	9 - 11
Discussion			
Key results	18	Summarise key results with reference to study objectives	11 - 13
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15
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Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	16

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Audiologists' preferences for patient-centredness: A cross-sectional questionnaire study of cross-cultural differences and similarities among professionals in Portugal, India and Iran

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Audiologists' preferences for patient-centredness: A cross-sectional questionnaire study of cross-cultural differences and similarities among professionals in Portugal, India and Iran

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Key Words

Patient-centeredness, Audiology, hearing healthcare, cross-culture

Abstract

Objective: Patient-centredness has become one of the important aspects of health service delivery, however, a limited number of studies exist that focus on this concept in the domain of hearing healthcare. The objective of this study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran.

Design: The study used a cross-sectional survey design with audiologists recruited from three different countries.

Participants: A total of 191 fully-completed responses were included in the analysis (55 from Portugal, 78 from India and 58 from Iran).

Main outcome measure: The Patient-Practitioner Orientation Scale.

Results: Patient-Practitioner Orientation Scale mean scores suggest that Audiologists have a preference for patient-centredness (i.e., mean of 3.6 in 5 point scale). However, marked differences were observed between specific PPOS items suggesting these preferences vary across clinical situations. A significant level of difference ($p < 0.001$) was found between audiologists' preferences for patient-centredness in three countries. Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran, although no significant differences were found in terms of age and duration of experience among these sample populations.

Conclusion: There are differences and similarities in audiologists' preferences for patient-centredness among countries. These findings may have implications for the training of professionals and also for clinical practice in terms of optimising hearing healthcare across countries.

Summary

Article Focus

- To examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran.

Key Message

- A significant level of difference was found between audiologists' preferences for patient-centredness in three countries.
- Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran.
- These findings may have implications for the training of professionals and for clinical practice in terms of optimising hearing healthcare across countries.

Strengths and Weakness

- A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists distributed across three countries.
- Some variables such as differing healthcare delivery models and educational systems were not controlled for, and may have contributed to the differences and similarities noticed in audiologists preferences.
- A sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire.
- The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response.

Introduction

There has been an increase in advocacy towards patients' involvement in their health and care delivery, hence the concept 'patient-centredness' has received much attention over the past few decades[1]. Patient-centeredness involves aspects such as increased importance placed on patient participation, self-determination of patients in their healthcare (i.e., the rights and abilities of patients to make their own choices and decisions about the medical care they receive), and the creation of a power-balanced therapeutic relationship between patients and professionals[2]. Although there has been little consensus over the meaning of this concept universally, patient-centredness has been described in the field of general practice with five main dimensions: (1) biopsychosocial perspective; (2) patient as a person; (3) shared knowledge and power; (4) therapeutic alliance; and (5) clinician as a person[1]. Patient-centeredness has been suggested to be fundamental part of the successful management of chronic health conditions[3].

Studies from a variety of areas of healthcare (including oncology, skin disorders, amyotrophic lateral sclerosis) have suggested that the health professional's preferences towards patient-centeredness is important in determining outcomes, including patient satisfaction[4-7]. A shortfall in patient-centeredness has also been linked to malpractice claims[8], and in general a measured preference for patient-centeredness correlates well with clinical practices such as open communication and a positive rapport between patient and clinician[9].

The profession of Audiology is particularly interesting in this context since, traditionally, there has been a focus on the technological aspects of hearing healthcare[10]. Some researchers believe that the last two decades has seen a paradigm shift; moving from a focus

on the technological aspects of hearing healthcare to a more person-centred approach to rehabilitation[10 11] . The empirical evidence for this shift is limited, with only a small number of published studies on patient-centeredness specific to audiology: Grenness et al.[12] studied the views of older adults who own hearing aids in order to further define patient-centred care in the context of audiological rehabilitation. Interviews were conducted with ten older adults with hearing aids, exploring their views and the data were analysed using qualitative content analysis. The results suggested three dimensions: (1) the therapeutic relationship; (2) the players - patient and audiologist; and (3) the clinical process, and an overarching theme of individualised care specific to audiological rehabilitation.

A recent study focussing specifically on Audiologists in Australia found that they report a high preference for patient-centredness[13]. Moreover, demographic factors such as age, duration of work experience and employment type (i.e., public/ private) acted as influencing factors towards explaining patient-centredness. For example, older audiologists and those who had practiced longer had a significantly greater preference for patient-centeredness when compared to younger and less-experienced audiologists. This is the only published study that has explicitly explored audiologists' preferences towards patient-centredness.

Two further studies have been conducted in the field of Audiology that, whilst not explicitly focusing on patient centeredness as a distinct entity, are highly relevant: Laplante-Lévesque et al conducted a qualitative study, exploring shared decision making in adults with acquired hearing impairment, which suggested that patients wanted rehabilitative audiologists to hear their experiences and preferences and to tailor their interventions accordingly[14]. Poost-Foroosh et al.[15] studied the factors in the interaction between Audiologists and clients in the decision to purchase a hearing aid. The study asked twelve clients with acquired hearing loss and ten audiologists, from both University and private practices, to supply statements

regarding which clinician-patient factors they felt influenced the decision to purchase a hearing aid. Client-centred interaction was identified as one of two major themes in the responses provided (client-empowerment was the other).

In all cases, the research discussed above consistently demonstrates the significant value that patients place in the relationship with the clinician. Across the studies it can be seen that different clinician-specific factors were found to influence the degree of patient-centeredness. As of yet there is little strong evidence for improved rehabilitation outcomes, although hearing aid purchase was observed to be positively influenced by more client-centred practice. The reader is referred to a recent literature review by Grenness et al.[2] for further details on patient-centred care in relation to rehabilitative Audiology.

Given the clinician-specific differences observed in the studies discussed above, and the fact that Audiology practices vary considerably across countries[16], it would be useful to examine audiologists' preferences for patient-centeredness across different countries which vary in terms of culture and healthcare systems. Moreover; it has been highlighted in general that there are few cross-cultural studies in the area of hearing healthcare, highlighting the need for such studies [18]

Cultural competence is a key aspect that is known to influence healthcare quality [17 18]. We hypothesise that the present culture to which an individual is exposed, as well as their cultural background, can influence both patients' and providers' preferences in healthcare and towards patient-centredness. We were particularly interested in understanding and comparing the preferences for patient-centeredness among Audiologists in European and Asian countries. Asian countries, compared to European countries, are considered to be more

collectivist societies, with a greater emphasis placed on the role of the individual as part of a local group and/or community with less of a tendency to focus on 'looking after oneself'[24]. Further to this, it has been posited that Asian countries have a tendency towards a high 'power distance' within levels of organisations – this reflects how willing the less powerful members of an organisation or group are to accept an unequal distribution of power[24]. In the context of patient-centredness such cultural effects might result in different opinions towards a hierarchical 'paternalistic' approach to audiological management (where the clinician may display an attitude of superiority over the patient), versus a patient centred-approach.

The aim of the current study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. These countries vary in terms of healthcare system, culture and socio-economic status. However, they were chosen as they all have a minimum educational level requirement of a Bachelor's degree education for Audiologists, and also due to convenience in data collection.

Method

Ethical Considerations

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Study Design and Participants

The current study used a cross-sectional survey design and purposive sampling to recruit participants. The email mailing list was obtained from university and professional associations which consisted of audiologists distributed throughout each of the three countries. The Patient-Practitioner Orientation Scale (PPOS) questionnaire, with some additional demographics questions (i.e., age, gender, number of years of experience, work set-up, country of origin and country in which currently practicing), was sent to 260 Audiologists (80 in Portugal, 110 in India and 70 in Iran) via email, requesting them to complete and return back to the researcher by email. Two email reminders were sent for non-respondents after two and four weeks respectively. As the Email ID might have contained some information that may have helped identify the individual, the survey was not fully anonymous. In the interest of keeping the survey short, only limited demographic information was requested and the choice was made to consider the most important aspects based on the findings of the previous studies[12-14], as discussed in the introduction.

Questionnaire

The PPOS was developed by Krupat et al.[19] to study physician preferences towards patient-centredness. However, a modified version of the PPOS that has previously been used to study audiologists' preferences towards patient-centredness was used in the current study[13]. This modified version of the PPOS was found to have acceptable internal consistency ($\alpha = 0.78$). This scale has eighteen questions which are scored on a 6-point Likert scale (1 = strongly agree; 6 = strongly disagree). The total score ranges from 18 (most audiologist-centred) to 108 (most patient-centred), and there are two sub-scales: The first nine-item sub-scale, *sharing*, reflects the extent to which the respondent believes that patients desire information and should be part of the decision making process (e.g., patients should be treated as if they were partners with the audiologists, equal in power and status). The other nine-item sub-

scale, *caring*, reflects the extent to which the respondent sees the patient's expectations, feelings, and life circumstances as critical elements in the treatment process (e.g., a treatment plan cannot succeed if it is in conflict with a patient's lifestyle or values).

An English version of the questionnaire was administered in India. Portuguese and Farsi translated versions were used in Portugal and Iran respectively. The questionnaire translation process was aimed at achieving different language versions of the English instrument that are conceptually equivalent in each of the target countries/cultures. That is, the focus was on cross-cultural and conceptual, rather than on linguistic/literal equivalence. We followed the well accepted forward-translations and back-translations method[20]. This process involved four main stages: forward translation; expert back translation; review and resolution of any discrepancies; and pre-testing with five participants each, in both Portugal and Iran.

Data Analysis

In the first instance, descriptive statistics (i.e., mean, standard deviation), a test of normality and a test of homogeneity of variance were performed. Mean total PPOS scores for audiologists from three countries were compared using an independent one-way analysis of variance (ANOVA). An alpha level of 0.01 was used to determine significance. Bonferroni *post-hoc* analysis was performed to further examine the relationship between groups. Further, a one-way analysis of covariance (ANCOVA) was performed with age and duration of work experience as covariates in order to exclude the influence of these variables on the observed differences between the group means.

Results

A total of 198 responses (response rate of 76%) were received. This included: 55 responses from Portugal (response rate of 69%); 82 responses from India (response rate of 75%); and 61 responses from Iran (response rate of 87%). However, three responses from Iran (incomplete data) and four responses from India (audiologists currently practicing in a different country) were excluded. A total of 191 responses (i.e., 73%) were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). Table 1 presents the demographic information and Table 2 presents PPOS scores. ANOVA showed no difference between groups in terms of age [F (2, 188) = 2.13, p = 0.121] and also duration of work experience [F (2, 188) = 1.16, p = 0.313].

[Table 1 near here]

[Table 2 near here]

Data for both full-scale and subscales were found to be normally distributed (based on Kolmogorov-Smirnov test and visual examination of histograms). Homogeneity of variances (based on Levene's test) was found for *caring* and *total mean* (p = 0.625 and 0.129 respectively) and not for *sharing* (p = 0.020). Since our data were found to be normally distributed, we elected to use ANOVA for our analysis, despite the fact that homogeneity of variances could not be assumed for the *sharing* subscale. A robust procedures (Welch and Brown-Forsythe) test was performed to check ANOVA findings which indicated the same significant differences between group means ($p < 0.001$ in all cases).

The PPOS mean scores from each population were analysed using a one way between-subjects ANOVA (see Table 3). A significant result was found for *sharing* subscale [F (2, 188) = 39.76], *caring* subscale [F (2, 188) = 24.61] and the *full* scale [F (2, 188) = 42.49]. Further, *post-hoc* tests with Bonferroni correction showed that the difference between

Portugal and India and also Portugal and Iran were significant for *sharing* subscale, *caring* subscale and *full* scale ($p = 0.001$, 0.001 and 0.001 respectively). However, the difference between India and Iran were not statistically significant for the *sharing* subscale, *caring* subscale and *full* scale ($p = 0.171$, $p = 0.841$ and $p = 1$ respectively).

[Table 3 near here]

These results show some differences and some similarities in audiologists' preferences towards patient-centredness from different countries (see Figure 1). Audiologists in Portugal had significantly greater preference for patient-centredness when compared to audiologists in India and Iran whose preferences did not differ much.

[Figure 1 near here]

Whilst our sample populations were well matched, with no significant differences with respect to age and experience, this does not exclude some possible influence of these variables on the data. Therefore we elected to include these variables as covariates, and assess if this had an influence on the main effect observed: The data met the necessary assumptions (i.e., linearity, homoscedasticity and homogeneity of regression slopes) and the ANCOVA results with age and duration of work experience as covariates and PPOS scores as dependent variable gave results consistent with the ANOVA, with a significant main effect for the full scale and subscales only and no significant interaction was observed. Thus we conclude that differences exist between the responses from audiologists from these countries in preference for patient-centredness, even after accounting for age and duration of work experience.

Discussion

This study examined and compared audiologists' preferences for patient-centredness in Portugal, India and Iran. The PPOS scores indicate the self-reported preference for patient-centeredness. An overall mean score per item of greater than 3 for all three countries included suggests that there is a tendency for Audiologists to favour patient-centredness, rather than a clinician-centred approach. This is true for both *caring* and *sharing* subscales. These values can be compared to those observed across other medical specialities[5]. For example, general practitioners and oncology physicians had higher PPOS mean scores (i.e., 4.3 and 5.0 respectively) when compared with physicians with a surgical background (i.e., 2.9). Thus, in general it appears that patient-centred practices vary depending upon the specific duties of the professional. We hypothesise that this could be linked to differences in training routes for medical subspecialties, in combination with the expectation of the role fulfilled by the clinician within their speciality. This is of relevance to Audiology, since training routes vary between countries, with education provision that may follow either a medical, scientific, technician, para-medical model (or a combination thereof)[21].

From examination of the responses to each item it can be seen that audiologists' preferences for patient-centredness vary depending upon the situation described (see Table 2). For example *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), *item 2* (i.e., most important part of the standard audiological appointment is the hearing test), *item 10* (i.e., clients generally want reassurance rather than information about their audiological condition), and *item 15* (i.e., client must always be aware that the audiologist is in charge) show markedly lower mean scores (2.4-2.8) than the mean PPOS scores (4.6-4.8) in *item 4* (i.e., it is often best for clients if they do not have the full explanation of their audiological condition), *item 7* (i.e., if audiologists are truly good at

diagnosis and treatment, the way they relate to clients is not that important) and *item 13* (i.e., a management plan cannot succeed if it is in conflict with a client's lifestyle or values). The content of the items showing a lower mean score are consistent with traditional audiological practices focusing on application of diagnostic testing, diagnosis and *treatment*, whereas the other items with higher mean scores are more explicit on their focus towards rehabilitation (using terms such as 'management plans', and words such as 'relate'). Similar patterns of PPOS results have been reported in a recent Australian study[13]. Thus it appears that an audiologist's views towards patient-centeredness vary depending whether they are considering their diagnostic or rehabilitative roles, and this is shared across countries. Some researchers suggest that there is a growing trend towards a greater role of client-centred rehabilitation by audiologists[10, 11]. Therefore; it may be useful to monitor Audiologists' preferences for patient-centeredness over time.

The study results suggest some country-specific differences and some similarities in the overall preference for patient-centeredness among audiologists from Portugal (M = 4.2; SD = 0.5), India (M = 3.5; SD = 0.6) and Iran (M = 3.4; SD = 0.4). Generally, audiologists' in Portugal had a high preference for patient-centredness, when compared to audiologists in India and Iran. Moreover, a recent study found that Australian audiologists[14] have high preference for patient-centredness (M = 4.46; SD = 0.52), which is similar to Portugal audiologists' preferences reported in the current study. As discussed later, there are a number of possible factors that may affect Audiologist's preferences for patient-centeredness, and it is likely that a number of these factors are more similar between Portugal and Australia than Portugal and India, or Portugal and Iran.

When comparing scores across countries the trend for higher PPOS scores provided by audiologists from Portugal compared to their peers from India and Iran, was true for almost all questionnaire items when analysed individually. However, some variations exist. For example, scores for *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), was similar among audiologists in all three countries. This might reflect a similarity in service delivery that place restricted time allowances on clinical session that would encourage the Audiologist to keep conversation 'on task'. Scores for *item 18* (i.e., when clients look up audiological information on their own, this usually confuses more than it helps) followed the reverse trend with audiologists in India and Iran scoring higher than audiologists in Portugal, albeit by relatively small differences in score. In this case, the ability of the patient population to find relevant information may be related to local factors such as internet access and language-specific information resources. *Item 2* had the largest difference in score between Portugal and the other two countries (i.e., Although health care is less personal these days, this is a small price to pay for audiological advances). The responses could have been influenced by how the respondent views recent audiological advances. Improvements in technology have occurred at different times in different countries; it may be that audiologist's responses are reflecting their opinion on which technological advancements they feel have helped clients, as much as reflecting their opinion on the changing personal aspect of healthcare. An example would be if the move from analogue to digital technology was more recent for India and Iran; this may be valued more highly against a loss of the personal involvement in healthcare than in Portugal, if this development had occurred further in the past. Studies from other disciplines have shown that the PPOS scores indicating preference for patient-centredness can vary among professionals in different countries. For example, medical practitioners' mean PPOS scores of 4.8 in the USA[4], compared to 3.3 in Greece[22].

The key influencing factors for the differences observed are the local healthcare system, national culture, organisational-related factors (see Grenness et al.[2]), ethnicity[23] and cross-cultural aspects[24] as indicated in studies from other areas. We hypothesise that one of the main contributing factors could be the '*culture*'. Geert Hofstede defines culture as *'the collective programming of the mind distinguishing the members of one group or category of people from another'*[25]. Figure 2 represents Hofstede's dimensions of national culture in Portugal, India and Iran, which include: power distance; individualism; masculinity; uncertainty avoidance; pragmatism; and indulgence[25]. A greater number of similarities are noticed between India and Iran when compared to Portugal (e.g., individualism, masculinity and uncertainty avoidance). These observations are consistent with a contribution of culture to differences and similarities in preferences for patient-centredness noticed among different countries in this study. It would also be consistent with the previously reported findings of medical practitioners from the USA, a country with a very high score of Individualism, compared to Greece, considered to be a collectivist culture. Given this finding, we argue that there is a need for increased focus on cultural competency for professionals in order to deliver patient-centred care[26].

[Figure 2 near here]

It is important to note that the current study focused on self-reported preferences for patient-centredness and not the actual clinical behaviour. Previous studies have suggested that the preferences for patient-centredness measured using PPOS correlate well with the actual clinical behaviour of professionals as measured by verbal exchange between patients and professionals[9]. However, not much is known about the patients' preferences for hearing healthcare services and more importantly for 'patient-centred healthcare' within these

countries. Further studies with a qualitative design may help explore these aspects. A further consideration is to what extent the clinician population will reflect the general 'culture' that is assigned to a nation: It is likely that this demographic vary from the general population as regards educational level in addition to other socioeconomic factors, and the degree of difference is likely to be specific to the particular profession, and also country being considered.

Other potential influences on audiologists' preferences for patient centredness are age, duration of work experience and employment type[13]. In the current study no significant differences existed between groups in terms of age and duration of work experience. The distribution of audiologists among different areas of employment was broadly similar between countries. However, differences were noted in terms of participants' gender between countries. The estimates of male/female ratio practicing in Audiology in these countries, as indicated by the professional bodies, are 1:4, 1:2 and 1:2 in Portugal, India and Iran respectively. The current study sample had a similar gender pattern of audiologists even though not exactly matching these ratios. Gender has been found to influence the practitioners' preference for patient-centredness with women displaying a greater preference for patient-centredness than male counterparts[27 28], although this was not found to be a significant factor for audiologists' preferences for patient-centredness in a large scale Australian study[13]. Hence, further exploration of a gender effect in preference for patient-centredness is necessary in future studies.

Study Implications and Future Directions

Patient-centredness is important in healthcare as it is linked to patient-outcomes such as increased satisfaction, adherence and health outcomes[29 30] and also to perceived quality of

service delivery[18]. Considering that there is evidence that rehabilitative Audiology patients also prefer patient-centred care[13], this concept has direct clinical implications in hearing healthcare.

The current study reports some interesting findings about audiologists' preference for patient-centeredness in different countries. However, it might be more appropriate to study patient-centredness of professionals in congruence with patients[4]. For example, although the mean scores in India and Iran were lower than those of Portugal, if the patients in India and Iran have similar preferences for patient-centredness as the professionals then, the care delivery is likely to meet patients' expectations. Further, it would be useful and important to understand how the concept of patient-centredness is understood and valued by both professionals and patients in different countries. If future studies (focussing on both professionals and patients) suggest marked differences, similar to those demonstrated here, it may be necessary to reconceptualise the principle of patient-centredness.

Given that patient-centredness has been found to be an important factor in patient satisfaction and outcomes, at least in some countries, and since it has been suggested that clinicians can learn to become patient-centred[31], it may be necessary to include such concepts in training programmes, particularly in cases where practitioners demonstrate a significantly lower preference towards patient-centredness than their patients. Moreover, future studies may also focus on understanding the differences and similarities in preferences towards patient-centredness among sub-cultures within the same country (e.g., different ethnic groups). Such studies may further inform the arguments of researchers who have been advocating the need for cultural competence (the ability of individuals, groups and organisations to effectively interact with individuals with different cultural backgrounds) in the delivery of healthcare

services[32]. Moreover; this may have consequences for the increasingly international Audiology workforce[16], both in terms of the migration of audiologists to other countries for employment and the provision of distance-learning models of Audiology education. Overall, this information may highlight the need to consider patient-centeredness in order to optimise hearing healthcare globally.

Strengths and Limitations

A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists' distributed across three countries. Nevertheless, the study has some limitations. For example, aspects such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences. However, there was a reasonable spread of audiologist practicing in public and private Audiology clinics, and audiologists in all three countries were trained to a minimum standard of a Bachelor's degree. A relatively small sample size and lack of anonymity in data collection were also limitations of the current study. We were aware that a sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire. The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response. These biases would have been present for all countries.

Conclusion

The data described here are the first in hearing healthcare to demonstrate specific differences and similarities in audiologists' preferences for patient-centeredness across three countries. We observed that the two countries with the most similar cultural profile had the most similar

preference level for patient-centred care. There are several factors that might influence preference for patient-centred care, and further investigation is required in order to determine the role of the education and healthcare system, organisational-related factors, and ethnicity in contributing to the differences and similarities noticed. Clinician reported Patient-centredness and the cultural aspects of the clinician and patient population are different across countries and this may have implications for the training professionals and implementation of clinical practice in terms of optimising hearing healthcare across countries.

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Contributors

VM - Contributed to most parts of the work including data collection, analysis and writing; PG - Contributed to data analysis, interpretation and write up; DT - Contributed to data collection and write up; TA - Contributed to data collection and write up; KR - Contributed to data collection and write up.

Funding

No funding was received to conduct this study.

Ethical Approval

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Data Sharing

No additional data are available.

Conflict of interests

None.

FIGURE LEGENDS:

FIGURE 1: Bar Graphs showing the mean total PPOS Score ('Full Scale'), and the mean PPOS Score for the 'Sharing' and 'Caring' Subscales for Audiologists from Portugal, India and Iran. (*) indicates a significant difference (P<0.01)

FIGURE 2: Bar graph showing Hofstede's cultural dimension values for Portugal, India and Iran. A high score power distance expresses that the less powerful members of a society accept and expect that power is distributed unequally. A high score on Individualism vs Collectivism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. A high score on 'Masculinity vs Femininity' suggests a preference in society for achievement, heroism, assertiveness and material rewards for success as opposed to cooperation, modesty, caring for the weak and quality of life. A high score on 'Uncertainty Avoidance' suggests members of a society feel uncomfortable with uncertainty and ambiguity. A high score on 'Pragmatism suggets the society encourages thrift and efforts in modern education as a way to prepare for the future, as opposed to relying on time-honoured traditions. A high score on 'Indulgence' suggests the society follows gratification of basic and natural human drives related to enjoying life and having fun, as opposed to restrain in such activities based on social norms.

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Tables

Table 1: Demographic information

	All participants (n = 191)	Portugal (n = 55)	India (n = 78)	Iran (n = 58)
Age in years (Mean±SD)	30.9±8.4	31.0±8.4	29.6±8.6	32.5±8.0
Gender (%)				
▪ Male	37	20	55	30
▪ Female	63	80	45	70
Work set-up (%)				
▪ Clinic public	35	23	39	41
▪ Clinic private	50	51	61	33
▪ Clinic both	12	15	0	26
▪ Education	1	2	0	0
▪ Not known	2	9	0	0
Education (%)				
▪ Bachelors	47	72	18	60
▪ Masters	48	22	74	40
▪ Doctorate	5	6	8	0
Work experience in years (Mean±SD)	7.2±8.1	7.8±8.2	6.1±8.8	8.1±6.5

Table 2: Modified patient practitioner orientation scale (PPOS): Mean scores and standard deviation

	All participants (n = 191)	Portugal (n = 55)	India (n = 78)	Iran (n = 58)
PPOS Items (Mean±SD)				
1. The audiologist is the one who should decide what gets talked about during an appointment.	2.4±1.1	2.4±1.2	2.3±1.2	2.5±1.2
2. Although health care is less personal these days, this is a small price to pay for audiological advances.	3.0±1.4	4.3±1.2	2.7±1.2	2.1±1.0
3. The most important part of the standard audiological appointment is the hearing test.	2.7±1.4	3.4±1.2	2.5±1.5	2.3±1.1
4. It is often best for clients if they do not have the full explanation of their audiological condition.	4.6±1.3	5.0±1.0	4.5±1.5	4.2±1.3
5. Clients should rely on their audiologists' knowledge and not try to find out about their conditions on their own.	3.2±1.7	4.2±1.4	3.4±1.6	2.0±1.3
6. When audiologists ask a lot of questions about a client's background, they are prying too much into personal matters.	4.4±1.3	5.0±1.0	4.0±1.3	4.2±1.4
7. If audiologists are truly good at diagnosis and treatment, the way they relate to clients is not that important.	4.8±1.2	5.5±0.7	4.4±1.3	4.6±1.2
8. Many clients continue asking questions even though they are not learning anything new.	3.2±1.2	3.4±1.2	3.2±1.2	3.0±1.2
9. Clients should be treated as if they were partners with the audiologist, equal in power and status.*	4.1±1.6	4.7±1.6	3.7±1.5	4.0±1.5
10. Clients generally want reassurance rather than information about their audiological condition.	2.8±1.1	3.3±1.0	2.7±1.1	2.5±1.1
11. If an audiologist's primary tools are being open and warm, the audiologist will not have a lot of success.	4.3±1.4	4.6±1.1	3.8±1.4	4.6±1.3

12. When clients disagree with their audiologist, this is a sign that the audiologist does not have the client's respect and trust.	3.8±1.2	4.6±1.0	3.7±1.1	3.1±1.2
13. A management plan cannot succeed if it is in conflict with a client's lifestyle or values.*	4.7±1.1	4.7±1.1	4.6±1.0	4.7±1.2
14. Most clients want to get in and out of the audiologist's office as quickly as possible.	3.5±1.4	4.4±1.2	3.3±1.2	2.9±1.3
15. The client must always be aware that the audiologist is in charge.	2.6±1.3	2.7±1.2	2.4±1.1	2.9±1.5
16. It is not that important to know a client's culture and background in order to treat the client's audiological condition.	4.6±1.3	5.3±0.9	4.3±1.4	4.6±1.2
17. Humour is a major ingredient in the audiologist's management of the client.*	4.1±1.3	4.8±1.0	3.8±1.3	3.8±1.4
18. When clients look up audiological information on their own, this usually confuses more than it helps.	2.9±1.3	2.6±1.0	2.8±1.4	3.4±1.3
PPOS Scales (Mean±SD)				
▪ Full scale	3.6±0.6	4.2±0.5	3.5±0.6	3.4±0.4
▪ Sharing subscale	3.6±0.7	4.2±0.6	3.4±0.7	3.2±0.5
▪ Caring subscale	3.7±0.6	4.1±0.5	3.5±0.5	3.6±0.5

Note: Score of 1 (strongly agree) = most clinician-centred; Score of 6 (strongly disagree) = most patient-centred. Items 9, 13 and 17 (*) are reversely worded items which were reverse scored.

Table 3: Differences in audiologists' preferences for patient-centredness between countries

	Degree of freedom	F-test	P
Sharing	2	39.76	< 0.001
Caring	2	24.61	< 0.001
Full scale	2	42.49	< 0.001

Audiologists' preferences for patient-centredness: A cross-sectional questionnaire study of cross-cultural differences and similarities among professionals in Portugal, India and Iran

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Abstract

Objective: Patient-centredness has become one of the important aspects of health service delivery, however, a limited number of studies exist that focus on this concept in the domain of hearing healthcare. The objective of this study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. ***Design:*** The study used a cross-sectional survey design with audiologists recruited from three different countries. ***Participants:*** A total of 191 fully-completed responses were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). ***Main outcome measure:*** The Patient-Practitioner Orientation Scale. ***Results:*** Patient-Practitioner Orientation Scale mean scores suggest that Audiologists have a preference for patient-centredness (i.e., mean of 3.6 in 5 point scale). However, marked differences were observed between specific PPOS items suggesting these preferences vary across clinical situations. A significant level of difference ($p < 0.001$) was found between audiologists' preferences for patient-centredness in three countries. Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran, although no significant differences were found in terms of age and duration of experience among these sample populations. ***Conclusion:*** There are differences and similarities in audiologists' preferences for patient-centredness among countries. These findings may have implications for the training of professionals and also for clinical practice in terms of optimising hearing healthcare across countries.

Key Words

Patient-centeredness, Audiology, hearing healthcare, cross-culture

Summary

Article Focus

- To examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran.

Key Message

- A significant level of difference was found between audiologists' preferences for patient-centredness in three countries.
- Audiologists in Portugal had a greater preference for patient-centredness when compared to audiologists in India and Iran.
- These findings may have implications for the training of professionals and for clinical practice in terms of optimising hearing healthcare across countries.

Strengths and Weakness

- A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists distributed across three countries.
- Some variables such as differing healthcare delivery models and educational systems were not controlled for, and may have contributed to the differences and similarities noticed in audiologists preferences.
- A sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire.
- The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response.

Introduction

There has been an increase in advocacy towards patients' involvement in their health and care delivery, hence the concept 'patient-centredness' has received much attention over the past few decades[1]. Patient-centeredness involves aspects such as increased importance placed on patient participation, self-determination of patients in their healthcare (i.e., the rights and abilities of patients to make their own choices and decisions about the medical care and treatment they receive), and the creation of a power-balanced therapeutic relationship between patients and professionals[2]. Although there has been little consensus over the meaning of this concept universally, patient-centredness has been described in the field of general practice with five main dimensions: (1) biopsychosocial perspective; (2) patient as a person; (3) shared knowledge and power; (4) therapeutic alliance; and (5) clinician as a person[1]. Patient-centeredness has been suggested to be fundamental part of the successful management of chronic health conditions[3].

Studies from a variety of areas of healthcare (including oncology, skin disorders, amyotrophic lateral sclerosis) have suggested that the health professional's preferences towards patient-centeredness is important in determining outcomes, including patient satisfaction[4-7]. A shortfall in patient-centeredness has also been linked to malpractice claims[8], and in general a measured preference for patient-centeredness correlates well with clinical practices such as open communication and a positive rapport between patient and clinician[9].

The profession of Audiology is particularly interesting in this context since, traditionally, there has been a focus on the technological aspects of hearing healthcare[10]. Some researchers believe that the last two decades has seen a paradigm shift; moving from a focus

on the technological aspects of hearing healthcare to a more person-centred approach to rehabilitation[10 11] . The empirical evidence for this shift is limited, with only a small number of published studies on patient-centeredness specific to audiology: Grenness et al.[12] studied the views of older adults who own hearing aids in order to further define patient-centred care in the context of audiological rehabilitation. Interviews were conducted with ten older adults with hearing aids, exploring their views and the data were analysed using qualitative content analysis. The results suggested three dimensions: (1) the therapeutic relationship; (2) the players - patient and audiologist; and (3) the clinical process, and an overarching theme of individualised care specific to audiological rehabilitation.

A recent study focussing specifically on Audiologists in Australia found that they report a high preference for patient-centredness[13]. Moreover, demographic factors such as age, duration of work experience and employment type (i.e., public/ private) acted as influencing factors towards explaining patient-centredness. For example, older audiologists and those who had practiced longer had a significantly greater preference for patient-centeredness when compared to younger and less-experienced audiologists. This is the only published study that has explicitly explored audiologists' preferences towards patient-centredness.

Two further studies have been conducted in the field of Audiology that, whilst not explicitly focusing on patient centeredness as a distinct entity, are highly relevant: Laplante-Lévesque et al conducted a qualitative study, exploring shared decision making in adults with acquired hearing impairment, which suggested that patients wanted rehabilitative audiologists to hear their experiences and preferences and to tailor their interventions accordingly[14]. Poost-Foroosh et al.[15] studied the factors in the interaction between Audiologists and clients in the decision to purchase a hearing aid. The study asked twelve clients with acquired hearing loss and ten audiologists, from both University and private practices, to supply statements

regarding which clinician-patient factors they felt influenced the decision to purchase a hearing aid. Client-centred interaction was identified as one of two major themes in the responses provided (client-empowerment was the other).

In all cases, the research discussed above consistently demonstrates the significant value that patients place in the relationship with the clinician. Across the studies it can be seen that different clinician-specific factors were found to influence the degree of patient-centeredness. As of yet there is little strong evidence for improved rehabilitation outcomes, although hearing aid purchase was observed to be positively influenced by more client-centred practice. The reader is referred to a recent literature review by Grenness et al.[2] for further details on patient-centred care in relation to rehabilitative Audiology.

Given the clinician-specific differences observed in the studies discussed above, and the fact that Audiology practices vary considerably across countries[16], it would be useful to examine audiologists' preferences for patient-centeredness across different countries which vary in terms of culture and healthcare systems. Moreover; it has been highlighted in general that there are few cross-cultural studies in the area of hearing healthcare, highlighting the need for such studies [18]

Cultural competence is a key aspect that is known to influence healthcare quality [17 18]. We hypothesise that the present culture to which an individual is exposed, as well as their cultural background, can influence both patients' and providers' preferences in healthcare and towards patient-centredness. We were particularly interested in understanding and comparing the preferences for patient-centeredness among Audiologists in European and Asian countries. Asian countries, compared to European countries, are considered to be more

collectivist societies, with a greater emphasis placed on the role of the individual as part of a local group and/or community with less of a tendency to focus on 'looking after oneself'[24]. Further to this, it has been posited that Asian countries have a tendency towards a high 'power distance' within levels of organisations – this reflects how willing the less powerful members of an organisation or group are to accept an unequal distribution of power[24]. In the context of patient-centredness such cultural effects might result in different opinions towards a hierarchical 'paternalistic' approach to audiological management (where the clinician may display an attitude of superiority over the patient), versus a patient centred-approach.

The aim of the current study was to examine and compare audiologists' preferences for patient-centredness in Portugal, India and Iran. These countries vary in terms of healthcare system, culture and socio-economic status. However, they were chosen as they all have a minimum educational level requirement of a Bachelor's degree education for Audiologists, and also due to convenience in data collection.

Method

Ethical Considerations

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Study Design and Participants

The current study used a cross-sectional survey design and purposive sampling to recruit participants. The email mailing list was obtained from university and professional associations which consisted of audiologists distributed throughout each of the three countries. The Patient-Practitioner Orientation Scale (PPOS) questionnaire, with some additional demographics questions (i.e., age, gender, number of years of experience, work set-up, country of origin and country in which currently practicing), was sent to 260 Audiologists (80 in Portugal, 110 in India and 70 in Iran) via email, requesting them to complete and return back to the researcher by email. Two email reminders were sent for non-respondents after two and four weeks respectively. As the Email ID might have contained some information that may have helped identify the individual, the survey was not fully anonymous. In the interest of keeping the survey short, only limited demographic information was requested and the choice was made to consider the most important aspects based on the findings of the previous studies[12-14], as discussed in the introduction.

Questionnaire

The PPOS was developed by Krupat et al.[19] to study physician preferences towards patient-centredness. However, a modified version of the PPOS that has previously been used to study audiologists' preferences towards patient-centredness was used in the current study[13]. This modified version of the PPOS was found to have acceptable internal consistency ($\alpha = 0.78$). This scale has eighteen questions which are scored on a 6-point Likert scale (1 = strongly agree; 6 = strongly disagree). The total score ranges from 18 (most audiologist-centred) to 108 (most patient-centred), and there are two sub-scales: The first nine-item sub-scale, *sharing*, reflects the extent to which the respondent believes that patients desire information and should be part of the decision making process (e.g., patients should be treated as if they were partners with the audiologists, equal in power and status). The other nine-item sub-

scale, *caring*, reflects the extent to which the respondent sees the patient's expectations, feelings, and life circumstances as critical elements in the treatment process (e.g., a treatment plan cannot succeed if it is in conflict with a patient's lifestyle or values).

An English version of the questionnaire was administered in India. Portuguese and Farsi translated versions were used in Portugal and Iran respectively. The questionnaire translation process was aimed at achieving different language versions of the English instrument that are conceptually equivalent in each of the target countries/cultures. That is, the focus was on cross-cultural and conceptual, rather than on linguistic/literal equivalence. We followed the well accepted forward-translations and back-translations method[20]. This process involved four main stages: forward translation; expert back translation; review and resolution of any discrepancies; and pre-testing with five participants each, in both Portugal and Iran.

Data Analysis

In the first instance, descriptive statistics (i.e., mean, standard deviation), a test of normality and a test of homogeneity of variance were performed. Mean total PPOS scores for audiologists from three countries were compared using an independent one-way analysis of variance (ANOVA). An alpha level of 0.01 was used to determine significance. Bonferroni *post-hoc* analysis was performed to further examine the relationship between groups. Further, a one-way analysis of covariance (ANCOVA) was performed with age and duration of work experience as covariates in order to exclude the influence of these variables on the observed differences between the group means.

Results

A total of 198 responses (response rate of 76%) were received. This included: 55 responses from Portugal (response rate of 69%); 82 responses from India (response rate of 75%); and 61 responses from Iran (response rate of 87%). However, three responses from Iran (incomplete data) and four responses from India (audiologists currently practicing in a different country) were excluded. A total of 191 responses (i.e., 73%) were included in the analysis (55 from Portugal, 78 from India and 58 from Iran). Table 1 presents the demographic information and Table 2 presents PPOS scores. ANOVA showed no difference between groups in terms of age [F (2, 188) = 2.13, p = 0.121] and also duration of work experience [F (2, 188) = 1.16, p = 0.313].

[Table 1 near here]

[Table 2 near here]

Data for both full-scale and subscales were found to be normally distributed (based on Kolmogorov-Smirnov test and visual examination of histograms). Homogeneity of variances (based on Levene's test) was found for *caring* and *total mean* (p = 0.625 and 0.129 respectively) and not for *sharing* (p = 0.020). Since our data were found to be normally distributed, we elected to use ANOVA for our analysis, despite the fact that homogeneity of variances could not be assumed for the *sharing* subscale. A robust procedures (Welch and Brown-Forsythe) test was performed to check ANOVA findings which indicated the same significant differences between group means ($p < 0.001$ in all cases).

The PPOS mean scores from each population were analysed using a one way between-subjects ANOVA (see Table 3). A significant result was found for *sharing* subscale [F (2, 188) = 39.76], *caring* subscale [F (2, 188) = 24.61] and the *full* scale [F (2, 188) = 42.49]. Further, *post-hoc* tests with Bonferroni correction showed that the difference between

Portugal and India and also Portugal and Iran were significant for *sharing* subscale, *caring* subscale and *full* scale (p = 0.001, 0.001 and 0.001 respectively). However, the difference between India and Iran were not statistically significant for the *sharing* subscale, *caring* subscale and *full* scale (p = 0.171, p = 0.841 and p = 1 respectively).

[Table 3 near here]

These results show some differences and some similarities in audiologists' preferences towards patient-centredness from different countries (see Figure 1). Audiologists in Portugal had significantly greater preference for patient-centredness when compared to audiologists in India and Iran whose preferences did not differ much.

[Figure 1 near here]

Whilst our sample populations were well matched, with no significant differences with respect to age and experience, this does not exclude some possible influence of these variables on the data. Therefore we elected to include these variables as covariates, and assess if this had an influence on the main effect observed: The data met the necessary assumptions (i.e., linearity, homoscedasticity and homogeneity of regression slopes) and the ANCOVA results with age and duration of work experience as covariates and PPOS scores as dependent variable gave results consistent with the ANOVA, with a significant main effect for the full scale and subscales only and no significant interaction was observed. Thus we conclude that differences exist between the responses from audiologists from these countries in preference for patient-centredness, even after accounting for age and duration of work experience.

Discussion

This study examined and compared audiologists' preferences for patient-centredness in Portugal, India and Iran. The PPOS scores indicate the self-reported preference for patient-centeredness. An overall mean score per item of greater than 3 for all three countries included suggests that there is a tendency for Audiologists to favour patient-centredness, rather than a clinician-centred approach. This is true for both *caring* and *sharing* subscales. These values can be compared to those observed across other medical specialities[5]. For example, general practitioners and oncology physicians had higher PPOS mean scores (i.e., 4.3 and 5.0 respectively) when compared with physicians with a surgical background (i.e., 2.9). Thus, in general it appears that patient-centred practices vary depending upon the specific duties of the professional. We hypothesise that this could be linked to differences in training routes for medical subspecialties, in combination with the expectation of the role fulfilled by the clinician within their speciality. This is of relevance to Audiology, since training routes vary between countries, with education provision that may follow either a medical, scientific, technician, para-medical model (or a combination thereof)[21].

From examination of the responses to each item it can be seen that audiologists' preferences for patient-centredness vary depending upon the situation described (see Table 2). For example *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), *item 2* (i.e., most important part of the standard audiological appointment is the hearing test), *item 10* (i.e., clients generally want reassurance rather than information about their audiological condition), and *item 15* (i.e., client must always be aware that the audiologist is in charge) show markedly lower mean scores (2.4-2.8) than the mean PPOS scores (4.6-4.8) in *item 4* (i.e., it is often best for clients if they do not have the full explanation of their audiological condition), *item 7* (i.e., if audiologists are truly good at

diagnosis and treatment, the way they relate to clients is not that important) and *item 13* (i.e., a management plan cannot succeed if it is in conflict with a client's lifestyle or values). The content of the items showing a lower mean score are consistent with traditional audiological practices focusing on application of diagnostic testing, diagnosis and *treatment*, whereas the other items with higher mean scores are more explicit on their focus towards rehabilitation (using terms such as 'management plans', and words such as 'relate'). Similar patterns of PPOS results have been reported in a recent Australian study[13]. Thus it appears that an audiologist's views towards patient-centeredness vary depending whether they are considering their diagnostic or rehabilitative roles, and this is shared across countries. Some researchers suggest that there is a growing trend towards a greater role of client-centred rehabilitation by audiologists[10, 11]. Therefore; it may be useful to monitor Audiologists' preferences for patient-centeredness over time.

The study results suggest some country-specific differences and some similarities in the overall preference for patient-centeredness among audiologists from Portugal (M = 4.2; SD = 0.5), India (M = 3.5; SD = 0.6) and Iran (M = 3.4; SD = 0.4). Generally, audiologists' in Portugal had a high preference for patient-centredness, when compared to audiologists in India and Iran. Moreover, a recent study found that Australian audiologists[14] have high preference for patient-centredness (M = 4.46; SD = 0.52), which is similar to Portugal audiologists' preferences reported in the current study. As discussed later, there are a number of possible factors that may affect Audiologist's preferences for patient-centeredness, and it is likely that a number of these factors are more similar between Portugal and Australia than Portugal and India, or Portugal and Iran.

When comparing scores across countries the trend for higher PPOS scores provided by audiologists from Portugal compared to their peers from India and Iran, was true for almost all questionnaire items when analysed individually. However, some variations exist. For example, scores for *item 1* (i.e., audiologist is the one who should decide what gets talked about during an appointment), was similar among audiologists in all three countries. This might reflect a similarity in service delivery that place restricted time allowances on clinical session that would encourage the Audiologist to keep conversation 'on task'. Scores for *item 18* (i.e., when clients look up audiological information on their own, this usually confuses more than it helps) followed the reverse trend with audiologists in India and Iran scoring higher than audiologists in Portugal, albeit by relatively small differences in score. In this case, the ability of the patient population to find relevant information may be related to local factors such as internet access and language-specific information resources. *Item 2* had the largest difference in score between Portugal and the other two countries (i.e., Although health care is less personal these days, this is a small price to pay for audiological advances). The responses could have been influenced by how the respondent views recent audiological advances. Improvements in technology have occurred at different times in different countries; it may be that audiologist's responses are reflecting their opinion on which technological advancements they feel have helped clients, as much as reflecting their opinion on the changing personal aspect of healthcare. An example would be if the move from analogue to digital technology was more recent for India and Iran; this may be valued more highly against a loss of the personal involvement in healthcare than in Portugal, if this development had occurred further in the past. Studies from other disciplines have shown that the PPOS scores indicating preference for patient-centredness can vary among professionals in different countries. For example, medical practitioners' mean PPOS scores of 4.8 in the USA[4], compared to 3.3 in Greece[22].

The key influencing factors for the differences observed are the local healthcare system, national culture, organisational-related factors (see Grenness et al.[2]), ethnicity[23] and cross-cultural aspects[24] as indicated in studies from other areas. We hypothesise that one of the main contributing factors could be the '*culture*'. Geert Hofstede defines culture as *'the collective programming of the mind distinguishing the members of one group or category of people from another'*[25]. Figure 2 represents Hofstede's dimensions of national culture in Portugal, India and Iran, which include: power distance; individualism; masculinity; uncertainty avoidance; pragmatism; and indulgence[25]. A greater number of similarities are noticed between India and Iran when compared to Portugal (e.g., individualism, masculinity and uncertainty avoidance). These observations are consistent with a contribution of culture to differences and similarities in preferences for patient-centredness noticed among different countries in this study. It would also be consistent with the previously reported findings of medical practitioners from the USA, a country with a very high score of Individualism, compared to Greece, considered to be a collectivist culture. Given this finding, we argue that there is a need for increased focus on cultural competency for professionals in order to deliver patient-centred care[26].

[Figure 2 near here]

It is important to note that the current study focused on self-reported preferences for patient-centredness and not the actual clinical behaviour. Previous studies have suggested that the preferences for patient-centredness measured using PPOS correlate well with the actual clinical behaviour of professionals as measured by verbal exchange between patients and professionals[9]. However, not much is known about the patients' preferences for hearing healthcare services and more importantly for 'patient-centred healthcare' within these

countries. Further studies with a qualitative design may help explore these aspects. A further consideration is to what extent the clinician population will reflect the general 'culture' that is assigned to a nation: It is likely that this demographic vary from the general population as regards educational level in addition to other socioeconomic factors, and the degree of difference is likely to be specific to the particular profession, and also country being considered.

Other potential influences on audiologists' preferences for patient centredness are age, duration of work experience and employment type[13]. In the current study no significant differences existed between groups in terms of age and duration of work experience. The distribution of audiologists among different areas of employment was broadly similar between countries. However, differences were noted in terms of participants' gender between countries. The estimates of male/female ratio practicing in Audiology in these countries, as indicated by the professional bodies, are 1:4, 1:2 and 1:2 in Portugal, India and Iran respectively. The current study sample had a similar gender pattern of audiologists even though not exactly matching these ratios. Gender has been found to influence the practitioners' preference for patient-centredness with women displaying a greater preference for patient-centredness than male counterparts[27 28], although this was not found to be a significant factor for audiologists' preferences for patient-centredness in a large scale Australian study[13]. Hence, further exploration of a gender effect in preference for patient-centredness is necessary in future studies.

Study Implications and Future Directions

Patient-centredness is important in healthcare as it is linked to patient-outcomes such as increased satisfaction, adherence and health outcomes[29 30] and also to perceived quality of

service delivery[18]. Considering that there is evidence that rehabilitative Audiology patients also prefer patient-centred care[13], this concept has direct clinical implications in hearing healthcare.

The current study reports some interesting findings about audiologists' preference for patient-centeredness in different countries. However, it might be more appropriate to study patient-centredness of professionals in congruence with patients[4]. For example, although the mean scores in India and Iran were lower than those of Portugal, if the patients in India and Iran have similar preferences for patient-centredness as the professionals then, the care delivery is likely to meet patients' expectations. Further, it would be useful and important to understand how the concept of patient-centredness is understood and valued by both professionals and patients in different countries. If future studies (focussing on both professionals and patients) suggest marked differences, similar to those demonstrated here, it may be necessary to reconceptualise the principle of patient-centredness.

Given that patient-centredness has been found to be an important factor in patient satisfaction and outcomes, at least in some countries, and since it has been suggested that clinicians can learn to become patient-centred[31], it may be necessary to include such concepts in training programmes, particularly in cases where practitioners demonstrate a significantly lower preference towards patient-centredness than their patients. Moreover, future studies may also focus on understanding the differences and similarities in preferences towards patient-centredness among sub-cultures within the same country (e.g., different ethnic groups). Such studies may further inform the arguments of researchers who have been advocating the need for cultural competence (the ability of individuals, groups and organisations to effectively interact with individuals with different cultural backgrounds) in the delivery of healthcare

services[32]. Moreover; this may have consequences for the increasingly international Audiology workforce[16], both in terms of the migration of audiologists to other countries for employment and the provision of distance-learning models of Audiology education. Overall, this information may highlight the need to consider patient-centeredness in order to optimise hearing healthcare globally.

Strengths and Limitations

A response rate of 76% was obtained for this questionnaire-based study and there was diversity in the data from audiologists' distributed across three countries. Nevertheless, the study has some limitations. For example, aspects such as healthcare delivery models and educational system were not controlled for, but may have contributed to the differences and similarities noticed in audiologists preferences. However, there was a reasonable spread of audiologist practicing in public and private Audiology clinics, and audiologists in all three countries were trained to a minimum standard of a Bachelor's degree. A relatively small sample size and lack of anonymity in data collection were also limitations of the current study. We were aware that a sampling bias may have been present, since audiologists with particular preferences may have been more inclined to respond to the questionnaire. The fact that identifiable information may have been present in the emailed responses had the potential to influence/discourage an individual's response. These biases would have been present for all countries.

Conclusion

The data described here are the first in hearing healthcare to demonstrate specific differences and similarities in audiologists' preferences for patient-centeredness across three countries. We observed that the two countries with the most similar cultural profile had the most similar

preference level for patient-centred care. There are several factors that might influence preference for patient-centred care, and further investigation is required in order to determine the role of the education and healthcare system, organisational-related factors, and ethnicity in contributing to the differences and similarities noticed. Clinician reported Patient-centredness and the cultural aspects of the clinician and patient population are different across countries and this may have implications for the training professionals and implementation of clinical practice in terms of optimising hearing healthcare across countries.

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Contributors

VM - Contributed to most parts of the work including data collection, analysis and writing; PG - Contributed to data analysis, interpretation and write up; DT - Contributed to data collection and write up; TA - Contributed to data collection and write up; KR - Contributed to data collection and write up.

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Ethical Approval

Ethical approval was obtained from the *School of Allied Health Sciences, Polytechnic Institute of Porto* at Porto and *All India Institute of Speech and Hearing* at Mysore for data

collection in Portugal and India respectively. This kind of study did not require ethical approval under the *Department of Audiology, University of Social Welfare and Rehabilitation Sciences* at Tehran for data collection in Iran.

Data Sharing

No additional data are available.

Conflict of interests

None.

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Tables

Table 1: Demographic information

	All participants (n = 191)	Portugal (n = 55)	India (n = 78)	Iran (n = 58)
Age in years (Mean±SD)	30.9±8.4	31.0±8.4	29.6±8.6	32.5±8.0
Gender (%)				
▪ Male	37	20	55	30
▪ Female	63	80	45	70
Work set-up (%)				
▪ Clinic public	35	23	39	41
▪ Clinic private	50	51	61	33
▪ Clinic both	12	15	0	26
▪ Education	1	2	0	0
▪ Not known	2	9	0	0
Education (%)				
▪ Bachelors	47	72	18	60
▪ Masters	48	22	74	40
▪ Doctorate	5	6	8	0
Work experience in years (Mean±SD)	7.2±8.1	7.8±8.2	6.1±8.8	8.1±6.5

Table 2: Modified patient practitioner orientation scale (PPOS): Mean scores and standard deviation

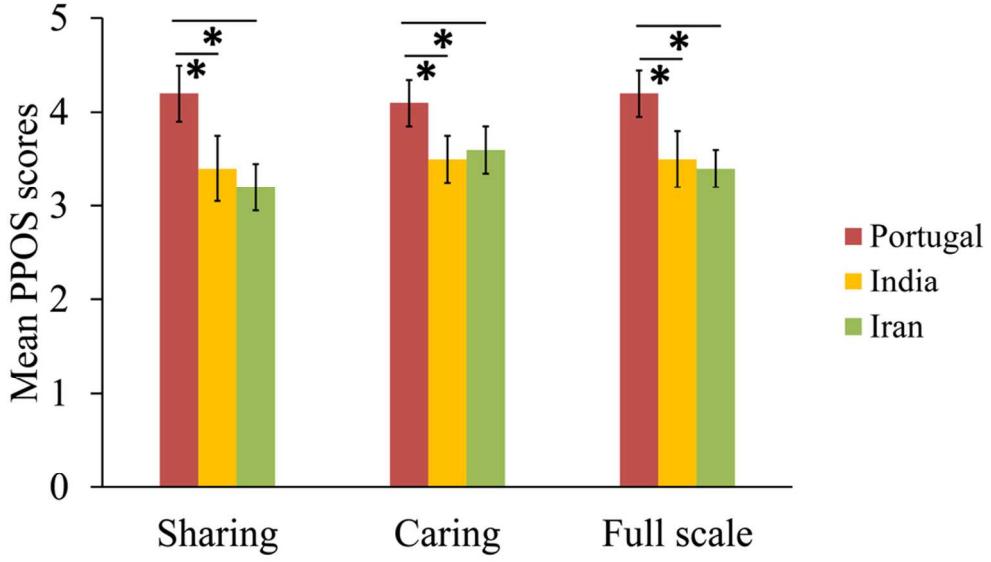
	All participants (n = 191)	Portugal (n = 55)	India (n = 78)	Iran (n = 58)
PPOS Items (Mean±SD)				
1. The audiologist is the one who should decide what gets talked about during an appointment.	2.4±1.1	2.4±1.2	2.3±1.2	2.5±1.2
2. Although health care is less personal these days, this is a small price to pay for audiological advances.	3.0±1.4	4.3±1.2	2.7±1.2	2.1±1.0
3. The most important part of the standard audiological appointment is the hearing test.	2.7±1.4	3.4±1.2	2.5±1.5	2.3±1.1
4. It is often best for clients if they do not have the full explanation of their audiological condition.	4.6±1.3	5.0±1.0	4.5±1.5	4.2±1.3
5. Clients should rely on their audiologists' knowledge and not try to find out about their conditions on their own.	3.2±1.7	4.2±1.4	3.4±1.6	2.0±1.3
6. When audiologists ask a lot of questions about a client's background, they are prying too much into personal matters.	4.4±1.3	5.0±1.0	4.0±1.3	4.2±1.4
7. If audiologists are truly good at diagnosis and treatment, the way they relate to clients is not that important.	4.8±1.2	5.5±0.7	4.4±1.3	4.6±1.2
8. Many clients continue asking questions even though they are not learning anything new.	3.2±1.2	3.4±1.2	3.2±1.2	3.0±1.2
9. Clients should be treated as if they were partners with the audiologist, equal in power and status.*	4.1±1.6	4.7±1.6	3.7±1.5	4.0±1.5
10. Clients generally want reassurance rather than information about their audiological condition.	2.8±1.1	3.3±1.0	2.7±1.1	2.5±1.1
11. If an audiologist's primary tools are being open and warm, the audiologist will not have a lot of success.	4.3±1.4	4.6±1.1	3.8±1.4	4.6±1.3

12. When clients disagree with their audiologist, this is a sign that the audiologist does not have the client's respect and trust.	3.8±1.2	4.6±1.0	3.7±1.1	3.1±1.2
13. A management plan cannot succeed if it is in conflict with a client's lifestyle or values.*	4.7±1.1	4.7±1.1	4.6±1.0	4.7±1.2
14. Most clients want to get in and out of the audiologist's office as quickly as possible.	3.5±1.4	4.4±1.2	3.3±1.2	2.9±1.3
15. The client must always be aware that the audiologist is in charge.	2.6±1.3	2.7±1.2	2.4±1.1	2.9±1.5
16. It is not that important to know a client's culture and background in order to treat the client's audiological condition.	4.6±1.3	5.3±0.9	4.3±1.4	4.6±1.2
17. Humour is a major ingredient in the audiologist's management of the client.*	4.1±1.3	4.8±1.0	3.8±1.3	3.8±1.4
18. When clients look up audiological information on their own, this usually confuses more than it helps.	2.9±1.3	2.6±1.0	2.8±1.4	3.4±1.3
PPOS Scales (Mean±SD)				
▪ Full scale	3.6±0.6	4.2±0.5	3.5±0.6	3.4±0.4
▪ Sharing subscale	3.6±0.7	4.2±0.6	3.4±0.7	3.2±0.5
▪ Caring subscale	3.7±0.6	4.1±0.5	3.5±0.5	3.6±0.5

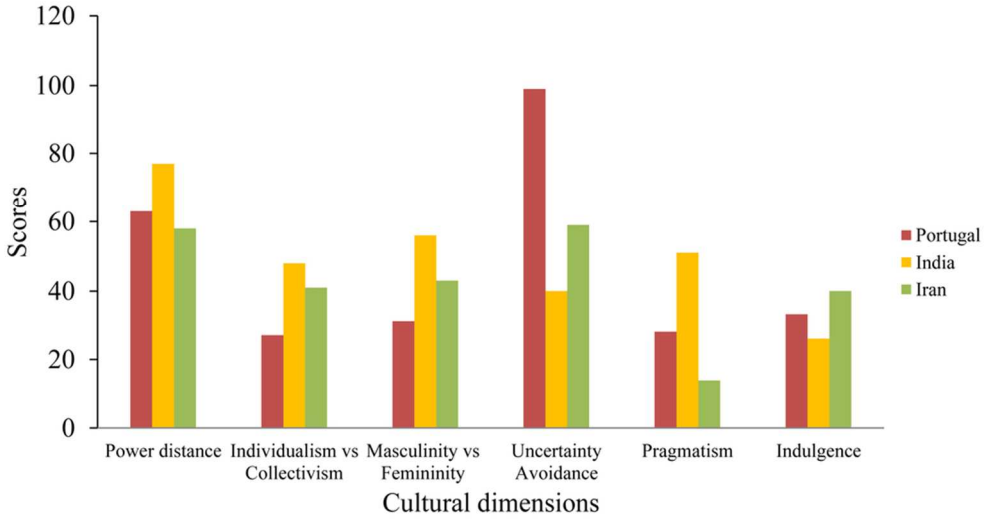
Note: Score of 1 (strongly agree) = most clinician-centred; Score of 6 (strongly disagree) = most patient-centred. Items 9, 13 and 17 (*) are reversely worded items which were reverse scored.

Table 3: Differences in audiologists' preferences for patient-centredness between countries

	Degree of freedom	F-test	P
Sharing	2	39.76	< 0.001
Caring	2	24.61	< 0.001
Full scale	2	42.49	< 0.001



Bar Graphs showing the mean total PPOS Score ('Full Scale'), and the mean PPOS Score for the 'Sharing' and 'Caring' Subscales for Audiologists from Portugal, India and Iran. (*) indicates a significant difference (P<0.01)
92x52mm (300 x 300 DPI)



Bar graph showing Hofstede's cultural dimension values for Portugal, India and Iran. A high score power distance expresses that the less powerful members of a society accept and expect that power is distributed unequally. A high score on Individualism vs Collectivism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. A high score on 'Masculinity vs Femininity' suggests a preference in society for achievement, heroism, assertiveness and material rewards for success as opposed to cooperation, modesty, caring for the weak and quality of life. A high score on 'Uncertainty Avoidance' suggests members of a society feel uncomfortable with uncertainty and ambiguity. A high score on 'Pragmatism suggets the society encourages thrift and efforts in modern education as a way to prepare for the future, as opposed to relying on time-honoured traditions. A high score on 'Indulgence' suggests the society follows gratification of basic and natural human drives related to enjoying life and having fun, as opposed to restrain in such activities based on social norms.
90x47mm (300 x 300 DPI)

STROBE 2007 (v4) checklist of items to be included in reports of observational studies in epidemiology*

Checklist for cohort, case-control, and cross-sectional studies (combined)

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2 & 3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4 – 6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7 – 8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7 - 8
Bias	9	Describe any efforts to address potential sources of bias	7 & 15
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	8
		(*c*) Explain how missing data were addressed	NA
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	8
		(*e*) Describe any sensitivity analyses	8
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9 & 21
		(b) Indicate number of participants with missing data for each variable of interest	NA
Outcome data	15*	Report numbers of outcome events or summary measures	9 - 11
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9 - 11
		(*b*) Report category boundaries when continuous variables were categorized	9 - 11
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	9 - 11
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	9 - 11
Discussion			
Key results	18	Summarise key results with reference to study objectives	11 - 13
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	13 - 15
Generalisability	21	Discuss the generalisability (external validity) of the study results	13 - 15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	16

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.