Norms for the Arabic International Outcome Inventory for Hearing Aids

M Mustafa

Citation

M Mustafa. *Norms for the Arabic International Outcome Inventory for Hearing Aids*. The Internet Journal of Otorhinolaryngology. 2004 Volume 4 Number 1.

Abstract

Arabic is one of the youngest members of the Semitic Language Family. Arabic critically differs from most modern European languages, not only English, in being "diglossic". The International Outcome Inventory for Hearing Aids (IOI-HA) was developed as a product of an international workshop on Self Report Outcome Measures in Audiological Rehabilitation. The Arabic version of the IOI-HA emerged at the end of 2003. This work is designed to study the norms for the Arabic IOI-HA version. Out of 215 of our patients, who were asked to come to the Audiology Unit, only 106 came and completed the IOI-HA. Most of them had sensorineural hearing loss and were illiterate (does not understand formal Arabic). Measures to help illiterate people were taken. The results reflected a generalized impression that our patients were not happy with their hearing aids. The mean scores of each of the items of the IOI-HA ranged from 2.3 to 2.7. An immense need to develop a modified version of the IOI-HA in the informal form of Arabic was clearly noticed. The hearing aid delivery strategy of the Egyptian Health Insurance Authority has also to be revised.

INTRODUCTION

Arabic belongs to the Semitic language family. Other languages in this family include Akkadian, Amharic, Aramaic, Assyrian, Hebrew, Maltese, Phoenician, Sabaean, Tigre and Ugaritic. From this group Amharic, Arabic, Aramaic, Hebrew, Maltese and Tigre are living languages. Hebrew had been a dead language, but has been successfully revived as the language of Israel. Aramaic is still spoken in two villages in Syria, but nothing new has been written in Aramaic for awhile. Out of this group Maltese is an exception on two counts, it is written using a modified Latin alphabet and it is the one dialect of Arabic to break off and become its own language (Freeman, 1994).

Arabic critically differs from most modern European languages, not only English, in being “diglossic”. Diglossia is a term meaning two tongues formed by combining the prefix “di” (=two) and the Greek word “glossa” (=tongue or language). No discussion of Arabic is complete without at least a cursory discussion of diglossia. Charles Ferguson is credited with first using the term diglossia in an article which he wrote in 1959 called Diglossia. He identified four languages, Arabic, Greek, Haitian Creole and Swiss German as being prime examples of languages which fit into his definition of diglossia. Very simply stated, he said that diglossic speech communities have a High variety that is very prestigious and a Low variety with no official status which are in complementary distribution with each other, for instance the High variety might be used for literary discourse and the Low variety for ordinary conversation. His original definition of diglossia was that the two varieties which are in a diglossic relationship with each other are closely related, and therefore diglossia is not bilingualism. In his defining examples he points out that the High variety is always an acquired form, and that some educated native speakers might even deny that they ever use the Low variety. An important component of diglossia is that the speakers have the personal perception that the High variety is the “real” language and that the Low variety is “incorrect” usage. In Arabic people talk about the High variety as being “pure” Arabic and the dialects as being corrupt forms (Freeman, 1996).

An Arabic speaker will learn her/his own regional colloquial language (Egyptian, Moroccan, Levantine Arabic) which may have a “high prestige” dialect (Cairene, Casablancan, Beiruti Arabic) by which standards all other dialects of the region are considered backward and “countrified.” All of these dialects have different vocabularies and pronunciations, but they all share a basic syntactic structure characterized by an absence of case endings, an SVO (Subject-Verb-Object) sentence structure, loss of the dual (except in very limited cases) and a reduced number of

verbal conjugations. But our hypothetical Arabic speaker will also, if s/he goes to school and wishes to be considered educated, have to learn Modern Standard Arabic, referred to as "Fus-ha". Fus-ha form is grammatically virtually identical with the Arabic of the Quran . This "superposed" variety is considered to be the only "true" form of Arabic, and it is almost exclusively the vehicle of written communication [De Young, 1999]. It is the form used in the Arabic version of the International Outcome Inventory for Hearing Aids (IOI_HA).

The International Outcome Inventory for Hearing Aids (IOI-HA) was developed as a product of an international workshop on Self Report Outcome Measures in Audiological Rehabilitation [Cox et al., 2000]. The workshop participants recognized a need to be able to combine and compare data from different investigations and clinical service models. Thus, the inventory was developed to facilitate cooperation among researchers and program evaluators in diverse hearing healthcare settings, including across national boundaries. For this plan to be successful, it is essential to generate psychometrically equivalent translations in the languages in which hearing aid research and treatment assessments are performed [Cox et al., 2002].

The Arabic version of the IOI-HA was developed at the end of 2003. It was the twenty-second in order [http://www.ausp.memphis.edu/harl/downloads/ioifiles/Arabic.pdf]. The translation of the English IOI-HA into Arabic, was checked by at least one additional qualified individual to ensure that each item captures the nuances of the original English wording. The Hearing Aid Research Laboratory (HARL) members approved it after they were sure that it carefully followed the design principles of the original version. There are seven items in the inventory, each accessing a different self-report outcome dimension. The items were written to be unambiguous, with few cognitive requirements and at a low reading level. Negative statements and reversed meanings were avoided. An attempt was made to eschew any cultural bias. All items were designed with five possible responses. The response categories for six of the items were chosen so that their semantic distinctions (in Arabic) were roughly equal. The seventh item requires an estimate of hours of daily use. To maximize the comprehensibility of the inventory, each item has a separate response continuum, and the responses are presented so that the most favorable item appears on the right.

This work is designed to study the norms for the Arabic IOI-HA version.

METHOD - THE IOI-HA

ITEMS

The inventory comprises seven items, each one targets a different outcome domain. The domains are, in order: Daily use, benefit, residual activity limitations, satisfaction, residual participation restrictions, impact on others, and quality of life. The inventory was administered in a paper and pencil mode. The wording and construction of items were chosen with the intention of minimizing literacy and cognitive demands. Each item has five response choices that are approximately equidistant and revised by an experienced psychologist. The layout of response choices proceeds from the worst outcome on the right to the best outcome on the left (Arabic writing is from right to left, Appendix A). It is sufficiently self-explanatory that no formal instructions are needed for educated persons who understand formal Arabic. However, more support was needed for our Arabic illiterate speakers. This support was in the form of some drawings and oral instructions. To help in the rating of the IOI-HA domains, the drawings were in the form of equal-sized circles colored black on the right (worst outcome), white on the left (best outcome), and the colored grades of the grey in between (Appendix B). The same wording and construction were used in oral manipulation of the different domains. The items and the response formatting are reproduced in both Arabic (http://www.ausp.memphis.edu/harl/downloads/ioifiles/Arabic.pdf) and English (http://www.ausp.memphis.edu/harl/downloads/ioifiles/English.pdf).

SCORING

Each item is scored using the integers from 1 to 5 for the 5 response choices. The rightmost response, indicating the poorest outcome, is scored as 1. The leftmost response, indicating the best outcome, is scored as 5.

NORMATIVE SELECTION CRITERIA

1. The hearing aids were obtained from the Egyptian Health Insurance Authority.
2. Behind-the Ear (BTE) hearing aid style.
3. No previous experience with amplification.
4. Analog with a compression circuit.
5. Unilateral fitting.
6. Hearing aids owned for a period of 6-12 months

when data obtained.

Our patients' records were revised and those who met the inclusion criteria above had been asked to come to the Audiology Unit in Sohag University Hospitals. Some were telephoned to be asked for coming .

RESULTS

PARTICIPANT DEMOGRAPHICS

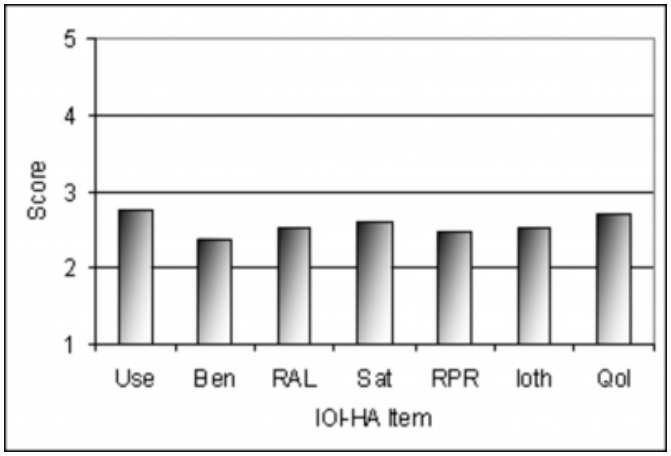
Out of 215 of our patients, who were asked to come to the Audiology Unit, only 125 responded and came to the clinic. Nineteen patients could not complete the inventory mostly due to cognitive problems. The 106 patients - Study Group - completed the inventory successfully: Seventy were illiterate and needed support and thirty-six were educated and no help was needed. Fifty-two percent of the study group were men, 48 percent were women. Those whose age was <40 years old were 51 while those whose age was >40 were 55. It was found that 68% of the study group had sensorineural hearing loss, 19% had conductive hearing loss, and 16% had mixed hearing loss. All of the hearing aids were analog instruments supplied with a compression circuit of any type.

SCORES

Each item was scored from 1 to 5 for the responses from right (worst) to left (best), respectively. Thus, a higher score is indicative of a better outcome. The mean score for each item is shown in Figure 1. All the mean scores fall between 2.3 and 2.7, around the middle of the scoring range.

Figure 1

Figure 1: Mean score for each IOI-HA item. Ben=benefit; RAL=residual activity limitations; Sat=satisfaction; RPR= residual participation restrictions; Ioth= impact on others; Qol= quality of life.

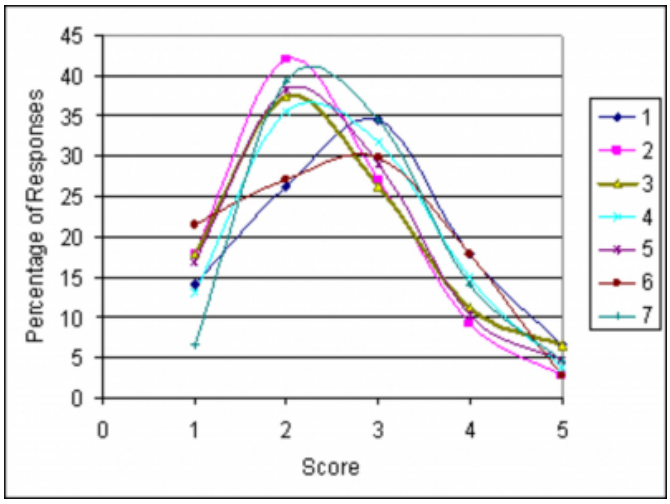


The distribution of scores for each item is shown in Figure 2.

This figure depicts the percentage of the time that each response level was used for each item. The scattergram looks similar to a Gaussian distribution curve. “Two” and “three” scores were the most frequently used scores.

Figure 2

Figure 2: Distribution of responses for each IOI-HA Item.



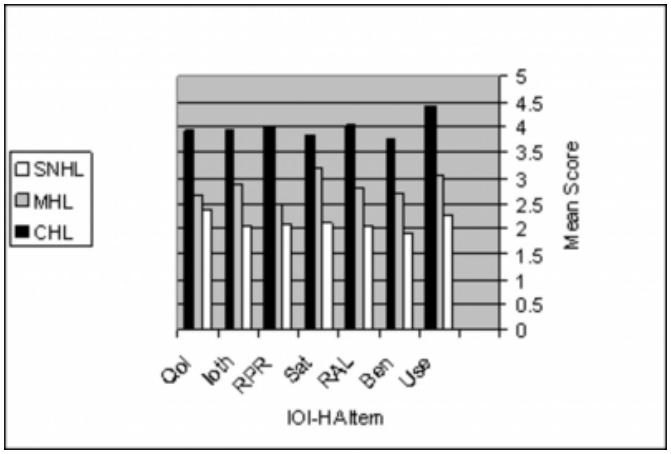
Both Figures: 1 and 2, reflect that the patients had some degree of unhappiness with their hearing aids.

EFFECT OF DEMOGRAPHICS ON IOI-HA RESPONSES

Participants who vary in their demographics, may also yield different IOI-HA scores. This fact should be considered for the generation of the norms of the Arabic version. It was definitely noticed that both education and the type of hearing loss have clear effects on the degree of participants' satisfaction with their hearing aids. Therefore, independent T-test was used to study the effect of the different demographic characteristics on the scores of the Arabic IOI-HA. None of the seven items yielded different mean scores for gender or age groups. However, the scores of the 7 items were different with high significance when either the type of hearing loss or the level of education was addressed (Figures 3).

Figure 3

Figure 3: Mean score on each of the IOI-HA item for subjects with different types of hearing loss. SNHL= Sensorineural Hearing Loss; MHL= Mixed Hearing Loss; CHL=Conductive Hearing Loss; Use=hours of use per day; Ben=benefit; RAL=residual activity limitations; Sat=satisfaction; RPR= residual participation restrictions; Ioth= impact on others; Qol= quality of life.



ARABIC IOI-HA NORMS

This has been proved by ANOVA as well as Tukey Post Hoc studies that a strong association is detected between the scoring level and both the type of hearing loss (SNHL, MHL and CHL; $F(1,26)=548.83$. $P< .001$) and the level of education (Educated or Illiterate; $F(1,96)=0.019$.$P<.001$). There were a highly significant effect of both variables on the scores of the Arabic IOI-HA (Tukey Post Hoc, $P<0.05$). Additionally, the type of hearing loss and the education level had their highest effect on the daily use item ($F(1,404)=11.956$. $P< .001$). As a consequence, five sets for norms were developed: one for each of these categories (table 1). They included:

1. Norms for SNHL.
2. Norms for MHL.
3. Norms for CHL.
4. Norms for the Educated.
5. Norms for the Illiterate.

Figure 4

Table 1: Means (M) and Standard Deviations (SD) are given for hearing aid wearers according to the type of hearing loss or the education level. SNHL= Sensorineural Hearing Loss; MHL= Mixed Hearing Loss; CHL=Conductive Hearing Loss; EDUC= educated; ILLI=illiterate; Ben=benefit; RAL=residual activity limitations; Sat=satisfaction; RPR= residual participation restrictions; Ioth= impact on others; Qol= quality of life.

Item	SNHL		MHL		CHL		EDUC		ILLI	
	M	SD	M	SD	M	SD	M	SD	M	SD
Use	2.26	0.89	3.04	0.58	4.41	0.5	3.41	1.05	2.42	0.98
Ben	1.91	0.68	2.71	0.71	3.76	0.75	2.88	1	2.1	0.85
RAL	2.02	0.84	2.8	0.6	4.05	1.02	3.05	1.14	2.22	0.99
Sat	2.11	0.76	3.19	0.74	3.82	0.81	3.16	0.97	2.31	0.92
RPR	2.08	0.78	2.47	0.74	4	0.86	3.02	0.97	2.18	0.96
Ioth	2.05	0.96	2.9	0.62	3.94	0.65	3.16	1.05	2.2	0.98
Qol	2.35	0.74	2.66	0.91	3.94	0.89	3.3	0.88	2.34	0.86
Total	14.82	4.28	19.8	2.22	27.94	4.14	22.02	5.7	15.8	5.3

This led to the addition of 2 comments upon each copy of the inventory: one about the type of hearing loss and the other about the education level.

DISCUSSION

Dealing with a diglossic language, like Arabic, imposed much challenge upon the provision of norms for the IOI-HA. The Arabic IOI-HA is available in the formal form of Arabic (Fus-ha form). The percentage of people aged 15 and above who can, with understanding, both read and write a short, simple statement related to their everyday life in Egypt is 56.1 % [Human Development Report-UNDP, 2001]. The ratio of literate people in this study was much lower (34%). This could be explained by the coming of most of the participants from rural areas, where hearing loss is more prevalent, due to the high rate of consanguineous marriages and consequently, the high prevalence rate of the genetic forms of hearing loss. Moreover, most of illiterate Egyptians cannot understand the exact meaning of the formal Fus-ha form of Arabic. This fact forced me to explain the different items of the IOI-HA, using the almost exact meaning, in their regional dialect orally. It was also necessary to create a chart in the form of graded colored (black to white) circles to help in the rating of each of the IOI-HA items (Appendix B).

The inclusion criteria of our patients differed markedly from the inclusion criteria used in the development of the norms of the English version [Cox et al, 2003]. The low socio-economic state as well as the strict rules of the Egyptian Health Insurance Authority, could not allow for more than one analogue BTE for each participant. All of the included participants could not afford the price of another hearing aid. This factor could have a generalized effect upon the responses of most of the participants (Fig. 1), because they

mainly preferred if they had a complete-in the-canal hearing aid (CIC). Egyptians, and most of Arab people, consider it shameful to have a hearing aid behind-the-ear. This non-satisfaction could be one of the causes of the frequent scoring by grades 2 and 3 (Fig. 2). The scattergram adopted a Gaussian distribution curve figure, that implies that there was a general agreement among participants that they are unhappy with their hearing aids. This implies that the rules applied by the Health Insurance Authority in Egypt should be more flexible, even if this requires more funds.

In comparison with the English version norms of the IOI-HA [Cox et al., 2003], the average scores of the seven items were lower. The score differences ranged, in a rough approximation, from 0.5 to 1.9. However, such a comparison became nonsense after the development of different norms categorized according to the effective demographic factors in this study (Fig 3 ; table 1). It is quite evident that, the literacy as well as the better function of the cochlea and the auditory nerve, allowed more satisfaction than in any other category of the available norms. The low percent of the score 5 (Fig. 2) reflects a clear image that this satisfaction was not free from criticism. Most of the participants having conductive hearing loss, as anticipated, wished to get a CIC rather than a compression circuit.

The integration of two demographic factors, literacy and type of hearing loss, may raise the idea of creating six rather than five categories of norms (SNHL & Lit, MHL& Lit, CHL & Lit; SNHL & Illi, MHL & Illi, CHL & Illi). This was additionally approved after the results of the ANOVA and the Post Hoc statistical tests. There were a highly significant effect of both factors on the scores of the different items of the Arabic IOI-HA, especially the daily use item. This may make it much more complicated. This limitation should be overcome by the development of advanced forms of the inventory, particularly designed for diglossic languages, that can minimize the scoring differences between the literate and the illiterate, and so, only three categories of norms will be delivered. Although, all my assistants and me, did our best to minimize this variation by oral instructions and drawings (Appendix A), the difference was still wide. Moreover, illiteracy affects the cultural and the social level of the participants, and as a consequence, its effect extends to reduce the participants' ability to accept the idea of the necessity of a hearing aid for her/his condition.

ACKNOWLEDGEMENTS

I am also indebted to both: Prof. Robyn M. Cox and Prof. Genevieve C. Alexander, for their continuous support and advice during the preparation of the Arabic version of the IOI-HA. I would like to thank my colleagues at Sohag Audiology Unit who spent a lot of time to help our illiterate patients.

APPENDIX A

Figure 5

الاستبيان العالمي للتعرف علي ناتج استخدام معينات السمع

1. هلا فكرت في الأيام التي استخدمت فيها معينة (معينات) السمع التي تخصك خلال الأسبوعين الماضيين . هل يمكنك أن تحدد متوسط عدد الساعات التي استخدمت فيها معينة (معينات) السمع التي تخصك خلال هذه الأيام ؟

لم استخدمها نهائياً | أقل من ساعة في اليوم | من 1- 4 ساعات في اليوم | من 4 - 8 ساعات في اليوم | أكثر من 8 ساعات في اليوم

2- هل يمكنك أن تحدد الموقف الذي تمنيت فيه لو أنك تسمع بطريقة أفضل قبل أن تحصل علي معينة (معينات) السمع التي تخصك؟ هل يمكنك أن تحدد إلي أي مدي استطاعت معينة (معينات) السمع أن تساعدك في هذا الموقف بالذات خلال الأسبوعين الماضيين ؟

لم تساعدني نهائياً | ساعدتني قليلاً | ساعدتني بدرجة متوسطة | ساعدتني بدرجة كبيرة | ساعدتني كأحسن ما يكون

3- فلنفكر مرة أخري في هذا الموقف الذي تمنيت فيه لو أنك تسمع بطريقة أفضل – هل يمكنك أن تحدد مدي الصعوبة التي لا زالت تواجهك بعد استخدامك معينة (معينات) السمع خلال نفس الموقف في الأسبوعين الماضيين ؟

صعوبة شديدة | صعوبة أقل من الشديدة | صعوبة متوسطة | صعوبة بسيطة | لا توجد أي صعوبة

4- بوجه عام، هل تعتقد أن استخدام معينة (معينات) السمع يستحق كل هذا العناء ؟

كلا البتة ، لا تستحق | تستحق بدرجة بسيطة | تستحق بدرجة متوسطة | تستحق بدرجة عالية | تستحق تماماً كل ما بذلت

5- خلال الأسبوعين الماضيين، وباستخدام معينة (معينات) السمع التي تخصك، هل يمكنك أن تحدد إلي أي مدي أثرت الصعوبات السمعية التي تعاني منها علي الأنشطة اليومية التي تمارسها ؟

أثرت بدرجة شديدة | أثرت بدرجة أقل من الشديدة | أثرت بدرجة متوسطة | أثرت بدرجة بسيطة | لم تؤثر إطلاقاً

6- خلال الأسبوعين الماضيين، وباستخدام معينة (معينات) السمع التي تخصك، هل يمكنك أن تحدد إلي أي مدي تسببت الصعوبات السمعية التي تعاني منها في ضيق الناس الذين يتعاملون معك ؟

تضايقوا بدرجة شديدة | تضايقوا بدرجة أقل من الشديدة | تضايقوا بدرجة متوسطة | تضايقوا بدرجة بسيطة | لم يتضايقوا إطلاقاً

7- بوجه عام ، إلي أي مدي غيرت معينة (معينات) السمع التي تخصك من استمتاعك بالحياة ؟

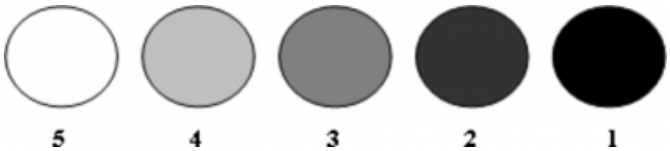
صارت الحياة أسوأ | لا تغيير | تحسن طفيف | تحسن جيد | تحسن أكثر من رائع

النسخة العربية ترجمة / محمد وائل محمد مصطفي

Translated by: **Mohamed Wael M. Mustafa**
E-mail: mwaelaud@yahoo.com
Website: **http://www.geocities.com/mwaelaud**

APPENDIX B

Figure 6



CORRESPONDENCE TO

Mohamed Wael M. Mustafa, Department of Audiology, Hallym University, 1 Okchon-Dong, Chunchon, Kangwon-Do, Republic of Korea, 200-702. Tel: 82 10 68712312 Fax:

82 33 251 4845 E-Mail: mwaelaud@yahoo.com

References

r-0. Cox RM, Alexander GC, Beyert CM: Norms for the international outcome inventory for hearing aids. J Am Acad Audiol 2003; 14(8): 403-413.
r-1. Cox RM, Hyde M, Gatehouse S, Noble W, Dillon H, Bentler R, Stephens D, Arlinger S, Beck L, Wilkerson D, Kramer S, Kricos P, Gagne JP, Bess F, Hallberg L.: Optimal outcome measures, research priorities and international cooperation 2000. Ear Hear; 21:106S–15S.
r-2. Cox RM, Stephens D, Kramer SE: Translations of the International Outcome Inventory for Hearing Aids 2002. Int J Audiol; 41:3-26.
r-3. De Young T. http://www.indiana.edu/~arabic/arabic_history.htm; 1999.
r-4. Freeman A: Intro to diglossia. http://www-personal.umich.edu/~andyf/diglossia1.html; 1994.
r-5. Freeman A: Perspectives on diglossia. http://www-personal.umich.edu/~andyf/digl_96.htm; 1996.
r-6. Human Development Report-UNDP. http://globalis.gvu.unu.edu/indicator_detail.cfm?IndicatorID=27&Country=EG

Author Information

Mohamed Wael M. Mustafa
Audiology Unit, Sohag University Hospitals