

## SATISFACTION WITH AMPLIFICATION IN DAILY LIFE (SADL) IN DIFFERENT TYPES AND DEGREES OF HEARING LOSS

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### ABSTRACT

**Introduction:** The aim of this study is to determine the satisfaction level of hearing aid users in different types and degrees of hearing loss using the satisfaction with amplification in daily life (SADL) questionnaire. **Methods:** 35 hearing aid users with different types of hearing loss who sought help from the International Islamic University, Malaysia (IIUM) Hearing and Speech Clinic at Jalan Hospital Campus, Kuantan, IIUM Medical Specialist Centre and private hearing aid centres were involved in this study. The data was collected from the participants who filled in the Malay SADL questionnaires. **Results:** Among the thirty-five (35) participants, there was no significant difference reported between the types of hearing loss and their satisfaction level in the SADL global score and each of the subscales. It was found that satisfaction level with the hearing aids may depend on several factors such as cosmetic preference, cost of hearing aid and audiologist competence. Meanwhile, in terms of degrees of hearing loss, 80% of the users were relatively satisfied with their hearing aids. Yet, there was no correlation between hearing aid users' satisfaction level and their degrees of hearing loss for all subscales and SADL global score. **Conclusions:** This study indicates that although hearing aid users reported to be satisfied with their hearing aids; there are some who are not satisfied in terms of feedback, telephone use, cosmetic appearance and costs of hearing aid. The findings of this study can benefit the audiologists, as they would be able to use the information to help future patients understand and adapt to the use of the hearing aids better.

*Keywords: Satisfaction, Amplification, Quality of life, Hearing aid users, Types of hearing loss, Degrees of hearing loss.*

## INTRODUCTION

Hearing loss as defined by the World Health Organization (WHO; 2017) is loss of the ability to hear from one or both ears completely or partially. There are three types of hearing loss, which are conductive, sensorineural and mixed hearing losses which may occur congenitally or may be acquired. Congenital means that it may present at birth or during the birthing process. Meanwhile, acquired hearing loss occur either during childhood or adulthood. In addition, there are four degrees of hearing impairment which are mild, moderate, severe and profound and people with different levels of hearing loss have different levels of difficulties to understand & perceive speech (Helvik, Jacobsen, & Hallberg, 2006).

However, the progression rates of hearing loss vary among different individuals and groups (Dalton, et al., 2003). Hearing loss most commonly happened among elderly and it needs to be dealt by taking into consideration the biological and economical aspects as well as social and individual impacts of the impairment upon communication with others. This due to the fact that the quality of life of people with hearing impairment may reduce which may affect the physical, mental and social health (Angeli, Jotz, Barba, Demeneghi, & Mello, 2009). Hence, hearing aid fitting, as an aural rehabilitation process, may solve their problem. However, the acceptance of hearing aids are highly dependent on users' satisfaction level.

There are several outcome measures that are available nowadays in order to quantify users' satisfaction level and benefits they got with their hearing aids. According to Cox & Alexander (1999), subjective measurement or self-report of disability capable to give worthy insight about the implication of disability in their daily lives. Those outcome measures able to assist in the rehabilitation process by promoting planning and execution which emphasizing the needs of people with hearing impairment. Therefore, it is important to shed some lights on the satisfaction level of hearing aids users in different types and degrees of hearing loss using the satisfaction with amplification in daily life (SADL) questionnaire.

## METHODS

This study has been reviewed and approved by the International Islamic University Malaysia Ethics Committee (IREC). The permission for data collection at the location of study prior to distributing the SADL questionnaire. All patient details were kept confidential and the participants also were allowed to withdraw anytime from the research process without being penalized.

### Study Design

This was a cross-sectional study to examine the information about the satisfaction level with amplification in different types of hearing loss at one particular time. The data was collected by using a questionnaire and distributed to participants who were fitted with hearing aids in order to elicit responses in each of the subscale in which represents specific users' preference. Furthermore, convenience sampling is implemented throughout the subjects' selection. Only volunteered participants who met the inclusion criteria were chosen.

### Subjects

The total participants recruited were 35, they have different types and degrees of hearing loss and were fitted with hearing aids. These participants were chosen regardless of their race, gender, religion, type of fitting and type of hearing aid. All of the participants were selected from several study locations, namely the IIUM Hearing and Speech Clinic at Jalan Hospital Campus, Kuantan, the IIUM Medical Specialist Centre and private hearing aid centres which are in Pahang, Selangor, Kuala Lumpur, Melaka, Johor and Kedah. The participants included in this study were based on the inclusion and exclusion criteria stated below.

**Inclusion Criteria**

Participants were hearing aid users, they can be either an experienced or a new user.

**Exclusion Criteria**

Any hearing aid users who have difficulty understanding Malay language.

Any hearing aid users who have no information regarding types of hearing loss.

**Study Instrumentation**

The instrument used for this study was an adapted Malay version of the Satisfaction with Amplification in Daily Life (SADL) which has been developed by Cox and Alexander (1999). It has been translated and validated into Malay by Ramli (2017). It consists of fifteen items which can be divided into four subscales and has seven Likert scales.

**Statistical Analysis**

The independent sample t-test was used in this study in order to compare the hearing aid users' satisfaction level with amplification in different types of hearing loss. It is to determine whether there are any significant differences between the mean of two independent groups. For this study, the two independent groups were those hearing aid users with two different types of hearing loss (sensorineural and mixed hearing losses). Conductive hearing loss was not included as there was no participants at all among hearing aid users with this type of hearing loss.

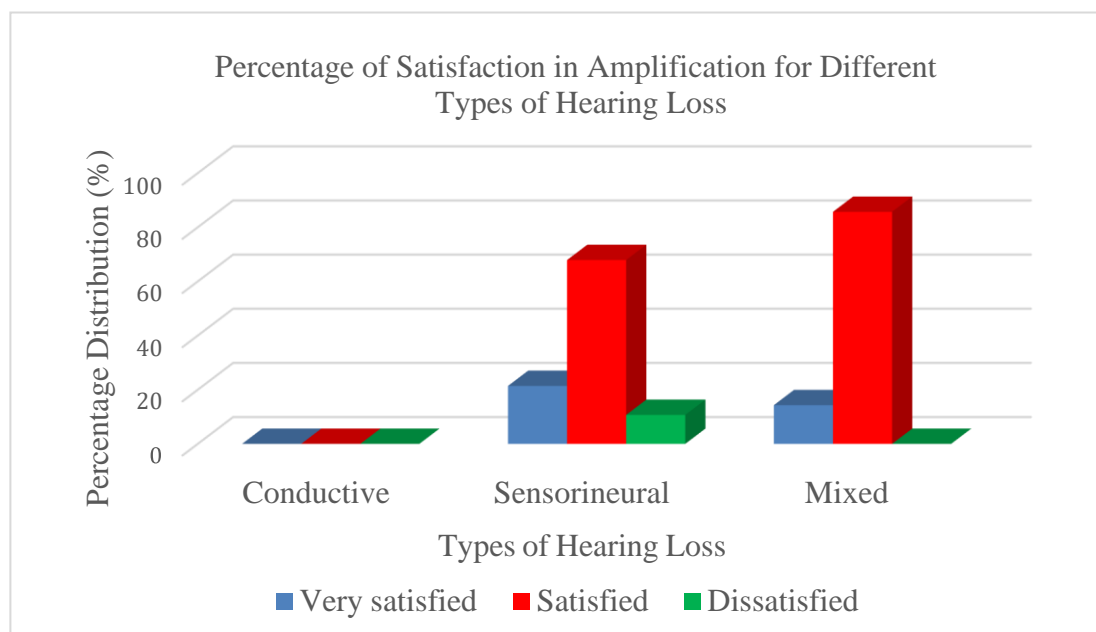
**RESULTS****Level of Satisfaction with Amplification in Different Types of Hearing Loss**

The total number of participants who have different types of hearing loss and the level of satisfaction of each of them based on percentage using descriptive analysis is discussed below. There is also discussion about the comparison in terms of mean of participants' satisfaction level with amplification in accordance to the standard global score between different types of hearing loss which are sensorineural and mixed hearing loss using independent sample t-test.

**Description of the Total Number of Participants with Different Types of Hearing Loss**

Out of 35 participants, 28 of them have sensorineural hearing loss, while the rest (7) had mixed hearing loss and none of them had conductive hearing loss.

Figure 1 indicates the percentage distribution for different types of hearing loss per level of global satisfaction. It is obviously shown that there was no participants who had conductive hearing loss. Yet, it significantly displays that majority of hearing aid users are relatively satisfied with their functioning of their device either sensorineural hearing loss or mixed hearing loss which recorded as 68 percent and 86 percent respectively.



**Figure 1** Percentage of Satisfaction in Amplification for Different Types of Hearing Loss

### Comparison of Satisfaction Level of the Hearing Aid User between Participants with Different Types of Hearing Loss

As shown in Table 2, it demonstrated the result for the satisfaction level of hearing aid users in different types of hearing loss using independent sample t-test. Independent t-test was conducted to compare the mean for each subscale and global score between two independent groups; sensorineural and mixed hearing loss. Although, in fact, the types of hearing loss comprised of three types of hearing loss, however, this study was only able to collect the data among hearing aid users with sensorineural hearing loss and mixed hearing loss. There were no participants at all among those who had conductive hearing loss. Therefore, independent t-test was used.

In addition, the participants who had mixed hearing loss recorded a small amount of number, which were seven out of 35 participants compared with those participants with sensorineural hearing loss. However, both samples still met the assumption of independent t-test as the total number of participants were more than thirty for both types of hearing loss. So, central limit theorem (CLT) can be applied.

Further in Table 2, it depicted that participants with mixed hearing loss had higher mean score than those with sensorineural hearing loss for all subscales and the global score. It indicates that there were higher satisfaction for participants with mixed hearing loss.

Next, Table 4.2 displays the Levene's test  $p$ -value and the  $p$ -value for independent t-test. Both values shows that the score for each subscale and global score are more than 0.05, so, it fails to reject the null hypothesis as there is no significant difference in terms of satisfaction level with hearing aid between sensorineural and mixed hearing loss. The assumption was met as the variance is equal and there was consistency between the Levene's test  $p$ -value and  $p$ -value for independent t-test. Hence, it can be concluded that satisfaction level with the hearing aid among hearing aid users are not affected by different types of hearing loss.

**Table 2** Mean of Different Types of Hearing Loss, Levene's Statistics and *p*-value

Subscales	Mean		<i>p</i> -value Levene's statistic	<i>p</i> -value
	Sensorineural hearing loss	Mixed hearing loss		
Global Score	5.20	5.35	0.156	0.591
Positive Effect	5.88	6.02	0.209	0.721
Negative Feature	3.94	4.00	0.708	0.910
Personal Image	4.90	5.05	1.000	0.691
Service and Cost	5.42	5.67	0.832	0.607

## DISCUSSION

In the current study, the majority of the participants, 28 users who have sensorineural hearing loss were relatively satisfied with their devices. Similar result is shown for the other seven hearing aid users who have mixed hearing loss. However, among those with sensorineural hearing loss, 11 percent were dissatisfied with their device and there was none among mixed hearing loss were dissatisfied. This is because users with sensorineural hearing loss may have damage in the cochlear function and this lead to limited hearing range and recruitment (Kim & Barrs, 2006).

This is in agreement with other study by Garstecki & Erlen (1998) which stated that users with this type of hearing loss has less benefits with amplification as component process of sensorineural hearing loss cannot be repaired and they have difficulty to understand acoustic information. This finding also was in compliance accordance to Dell'Antonia, Ikino, & Filho (2013). They explained that those hearing aid users with mixed hearing loss has more satisfaction with their hearing aid due to the factor that their bone conduction system is working better compared to those with sensorineural hearing loss.

However, based on the results of independent sample t-test, it showed there is no significant difference in relation to the satisfaction level with hearing aid between sensorineural and mixed hearing loss. Therefore, the hearing aid users' satisfaction level does not depend on their different types of hearing loss. Hence, prescribing hearing aids for those with different types of hearing loss need to take into account different characteristics and features of hearing aid as it is important in auditory rehabilitation.

## CONCLUSION(S)

Generally, this research would be able to assist hearing aid users in attaining the satisfaction and improved their health-related quality of life (HRQoL) by quantifying the degree of satisfaction through the SADL questionnaire. SADL comprised four subscales which are positive effect, negative feature, personal image and service and cost which can reflects the users' needs and preference towards their hearing aid performance. Based on the subscales in SADL questionnaire, majority users were relatively satisfied with their hearing aid regardless of their different types of hearing loss. The satisfied hearing aid users then can reach considerable HRQoL benefits as they able to perceive the important component that might influence their satisfaction level.

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