IMPACT OF A VIDEO-BASED INTERVENTION ON THE KNOWLEDGE, ATTITUDES, AND BEHAVIORS TOWARDS HEARING LOSS PREVENTION AMONG HIGH SCHOOL STUDENTS IN RAMON MAGSAYSAY HIGH SCHOOL, MANILA

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Impact of a Video-based Intervention on the Knowledge, Attitudes, and Behaviors (KAB) towards Hearing Loss Prevention among High School Students in Ramon Magsaysay High School, Manila

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ABSTRACT

Objective: This study aimed to assess the effectiveness of a video-based intervention on KAB towards hearing loss prevention among high school students in Manila, using a locally validated version of the psychometrically validated hearing loss prevention questionnaire by Saunders, et al (2014).

Methodology: This study had two phases. The first phase was a local validation study of a questionnaire by Saunders, et al (2014), among experts and 19 students from grade 7 – 10 of Ramon Magsaysay High School. The locally validated questionnaire was used in the second phase of this study. The latter was an experimental study design that evaluated knowledge, attitudes, and behaviors of grade 7 – 10 students at baseline and post- video intervention. A total of 155 students completed the pre- and post- video intervention questionnaire.

Results: The locally validated questionnaire achieved an acceptable Cronbach's alpha of 0.741. There was a significant difference on attitude pre- and post- video presentation at p=0.019 (CI 95%, $p < 0.05$). However, both knowledge and behavior had no significant change after viewing of the video.

Conclusion: The video-intervention used in this study was effective in improving attitudes towards hearing loss prevention among high school students in Manila, and could be the main motivator for avoiding practices that will promote hearing loss.

Keywords: hearing loss prevention, knowledge, attitude, behavior, questionnaire, video-based intervention, adolescent healthcare

I. INTRODUCTION

Hearing impairment is a broad term that refers to varying degrees of hearing loss, ranging from hard-of-hearing to total deafness.[1] It was found to be the second highest form of disability, next to moving disability, afflicting 13% of all disabled persons.[9]

The World Health Organization (WHO) estimated in 2012, that approximately 360 million people have disabling hearing loss (threshold of >/41 decibels for 15 years old and above and >/31 decibels for children below 15 years). Majority of them were 15 years old and above, comprising 91%, and the rest were children below 15 years old comprising 9% or 32 million.

Locally, we have a few data regarding hearing impairment. According to the DOH National Registry in 1997, hearing impairment was said to be 17% or 97,957 per 577,345. An unpublished prevalence study on hearing loss done predominantly in the rural areas of the Philippines last 2005, found that only 0.1% used hearing protection on a daily basis and only a small number of people were instructed on protecting their hearing.[9]

Hearing loss can be defined by numerous clinical criteria that include causality, time of onset, age of onset, clinical presentation, anatomic defect, severity, and frequency loss.[2] For each type, there can be numerous causes. In developed countries, genetic causes account for at least 50 – 60% of childhood hearing loss. In the Philippines' rural setting, impacted cerumen and otitis media (chronic suppurative, acute or serous) are the most prevalent causes of hearing loss. [9]

Published researches, however, found that hazardous noise exposure is the most common cause of preventable hearing loss. A Recommended Exposure Limit (REL) to noise up to 85 decibels over an 8-hour period has been set by the National Institute for Occupational Safety and Health (NIOSH) to avoid development of hearing loss.[15]

In the World Health Organization – Prevention of Deafness and Hearing Impairment meeting in 1997, some of the key points were: noise-induced hearing loss (NIHL) will add substantially to the global burden of disability hence an important public health priority due to the spread of industrialization. Aside from this, it was observed that the risk from social noise was increasing for young people in developed countries.[16] Our present generation is equipped with technology that makes potential hearing hazards, such as listening to loud music, more accessible. Young adults are frequently exposed to high noise levels such as when listening to music, e.g. at concerts and discotheques/dances and in pubs, clubs, aerobic classes, and when using mp3 players. It has been shown in studies that the average sound level at concerts can be between 120 decibels and 140 decibels, whereas the noise levels at clubs and pubs can measure above 90 decibels (Sadhra, et al, 2002).[13] To prevent NIHL caused by recreational noise exposure in young adults, information regarding risk-taking behavior is necessary to adequately construct hearing conservation programs (HCPs) designed to induce more health-orientated behavior.

The complications of hearing impairment, however, depend on the nature and degree of the hearing loss and on the individual characteristics of the child. Even children who do not seem to have hearing problems, but have mild or unilateral hearing loss, can have a detrimental effect on the development of a young child and on school performance.[3] Children, who do not perceive hearing loss that is present, may miss listening information and are at risk for learning disabilities.[6] Children with hearing loss frequently experience speech-language deficits and exhibit lower academic achievement and poorer social-emotional development than their peers with normal hearing.[1]

In our setting, studies on hearing loss prevention are scanty. With the gravity of its compications mentioned above, it is a must to increase awareness, improve knowledge and attitudes and refine beliefs toward hearing loss prevention among the adolescent population.

Because hearing impairment is a silent growing problem, equivalent growth on knowledge, positive attitudes, and better behaviors towards hearing conservation is needed to avoid eventual detrimental complications of hearing impairment.

II. OBJECTIVES OF THE STUDY

General Objective

To assess the effectiveness of a video-based intervention on KAB towards hearing loss prevention among high school students in Manila, using a locally validated version of the psychometrically validated hearing loss prevention questionnaire by Saunders, et al (2014).

Specific Objective

1. To determine the knowledge, attitudes, and behaviors (KAB) towards hearing loss prevention of the participants using a locally validated version of the KAB questionnaire by Saunders, et al. (2014) at baseline and post-intervention.
2. To determine if there is a signficant difference between the KAB of the participants between pre- and post-intervention.

III. SIGNIFICANCE OF THE STUDY

We are already in the age wherein the emergence of gadgets, the Internet, and multimedia are rampant and more accessible. Children now have more reasons to place earphones/headphones as long as they can and as loud as they desire. The importance of being informed of the complications of hearing impairment is critically important, that interventions are developed throughout the world to promote hearing conservation measures.

The adolescent stage of a person is crucial such that making simple decisions can make or break their future. Decisions such as listening to loud music everyday while they walk to school, ride the bus, or while they sit in a café, could already predispose them to achieve less in their education or in their future work place. Incorrect ear care, ignoring hearing loss symptoms, and avoiding health care consults can also put them at risk to more severe hearing impairment.

As of writing, no focused study to assess any mode of intervention for hearing loss prevention has been done in the local setting for this age group.

This study aims to increase knowledge, and improve attitude and behaviors of high school students in Metro Manila toward hearing loss prevention thru a video-based intervention.

IV. REVIEW OF RELATED LITERATURE

Risk Factors in Developing Hearing Impairment

There are several risk factors implicated in hearing impairment among adolescents and young adults. Some of these risk factors are ranked to be the most common ear and hearing disorders. Based on the Ear and Hearing Disorder Survey conducted in the Philippines, these include earwax (70.3%), dry perforation (5.6%), chronic OM (10.2%) and serous OM (8.6%). Moreover, prevalence of disabling hearing impairment is found to be at 20.7%. [9]

Exposure to hazardous levels of noise is the most common cause of preventable hearing loss (Feldman & Grimes, 1985). [10] Awareness of the potential harmful effects of loud sounds on hearing, and not doing anything about it, is an example of health risk-taking behavior. This kind of risky behavior in adolescence or young adulthood may cause permanent hearing problems later in life (Wide´n, 2006). [13]

People tend to underestimate the impact of hearing loss on communication and quality of life (Saunders et al, 2013). As a result hearing protection is underutilized (Crandell et al, 2004; Bogach et al, 2005). [10]

A conference held by the National Institute of Health in 1990 entitled

"Noise and Hearing Loss," made the following recommendation in their Consensus Statement: "In addition to existing hearing conservation programs, a comprehensive program of education regarding the causes and prevention of NIHL should be developed and disseminated, with specific attention directed toward educating school-age children." Additionally, increasing the use of appropriate ear protection, equipment, and practices; reducing noise-induced hearing loss in children and adolescents aged 17 years and under; and reducing adult hearing loss in the noise-exposed public, were all part of the objectives of Healthy People 2010.

Several hearing loss prevention programs evaluated the effectiveness of their efforts, usually by administration of a pre- and post instruction questionnaire (Bennett & English, 1999; Blair et al., 1996; Chermak, Curtis, & Seikel, 1996; Chermak & Peters-McCarthy, 1991; Knobloch & Broste, 1998; Lass et al., 1987; Lerman, Feldman, Shnaps, Kushnir, & Ribak, 1998; Lewis, 1989; Lukes & Johnson, 1998; Randolph, Hudak, & Vaught, 2003). Administration of post-questionnaires varied from immediately after to 6 weeks following program delivery. [11]

Relation of health belief models

Rollnick et. Al. (1992) and Newson et. Al. (2012) said that people are resistant to change despite campaigns to increase the public's awareness on the dangers of their risky behavior. Rawool et.al. (2008) reported that out of 248 students in their study, 90% were aware that loud music can cause damage to hearing, but 44% still continued to use noisy equipment without any protection

and about 18% sat near the speakers when Attending concerts.[10]

People are generally resistant to changing health behaviors (Rollnick et al, 1992) – even when extensive public health messages bring awareness of the dangers of those behaviors, and when individuals know they can lessen the impacts of a chronic health condition by taking action.[10] Knowledge about the risks of noise induced hearing loss (NIHL) from loud music was not a significant predictor of intent to use hearing protection but rather attitudes, peer influences, and behaviors were. The use of hearing protection among this group was associated more closely with their beliefs than with their knowledge. [10]

Landalv et. Al. (2013) studied the attitudes of individuals, aged 15 – 19 years old, to loud music and found that these were associated with being prepared to take risks, the norm of being invulnerable, as well as the presence of sound sensitivity and tinnitus. In order to understand and address these problems, researchers already started to look into ways to determine barriers that hinder translating knowledge into action, especially in the adolescent population. Adaptation of the health behavior models into understanding attitudes and behaviors toward health, including hearing conservation have been done.

According to the Health Belief Model (HBM) adapted in the study of Saunders, et al (2014), the likelihood that an individual will engage in a health behavior depends on the interplay of six factors, namely: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, perceived self-efficacy, and cues to action. [10] Previous studies have used the Health Belief Model (HBM) in examining hearing-conservation related

behaviors, and significant associations have been shown between perceived susceptibility and behaviors towards loud noise (Bogach et al, 2005; Chung et al, 2005; Ferrari & Chan, 1991; Rawool & Collogon-Wayne, 2008), perceived severity of hearing loss and hearing conservation-related behaviors (Rawool & Collogon-Wayne, 2008), perceived barriers and the use of hearing protection (Bogach et al, 2005; Chung et al, 2005; Rintelmann & Borus, 1968), perceived self-efficacy, peer pressure, and tolerance of loud noise (Wuest & Getty, 1992), and between intentions to use hearing protection and cues to actions (i.e. symptoms of hearing loss; Bogach et al, 2005; Widén & Erlandsson, 2004a,b).[10]

Widén et al (2011) looked at the relationship between beliefs and hearing protective behaviors of 543 youths (age range 16 to 20 years). They found out that attitudes towards noise and degree of perceived risk from noise explained 15% of the variance in use of hearing protection when in clubs/dancing, and that the combination of perceived susceptibility to noise, the norm of being invulnerable and degree of perceived risk explained 36% of the variance on the use of hearing protection at concerts.

Evaluating KAB in relation to the Health Belief Model (HBM) pertaining to hearing conservation is imperative for us to know how to remove the barrier between knowledge and application of preventive measures of hearing conservation. There are already a number of studies that correlate the HBM with attitudes and behaviors toward hearing conservation among adolescents. While most were conducted via informal surveys or interviews, the questionnaire validated in this study is originally from Saunders, et al (2014),

who developed a psychometrically validated KAB questionnaire pertaining to hearing conservation within the constructs of the HBM.[4]

Saunders et.al. in 2014 showed that knowledge scores increased in 67% of participants who received hearing education intervention, however knowing about the dangers of NIHL and hearing protection was not shown to be directly associated with hearing protection behaviors. Others have reported similar findings (Crandell et al, 2004; Rawool & Colligon-Wayne, 2008; Gilles et al, 2012).

Hearing protection use was significantly associated with all but perceived severity and perceived self-efficacy factors, such that favorable attitudes as defined by the HBM were associated with use of hearing protection, while less favorable attitudes were associated with non-use of hearing protection. Studies have also shown that a simple task such as asking people about their intentions and attitudes towards a specific behavior increases the probability of their subsequent engagement in that behavior (Levav & Fitzsimons, 2006; Jeffery et al, 2006).

V. METHODOLOGY

Study Design

This study had two phases. The first phase was a local validation of an adapted questionnaire by Saunders, et al (2014), among experts in the field of Pediatrics, Otology, and Psychiatry, and grade 7 – 10 of Ramon Magsaysay High School. The locally validated questionnaire was then used in the second phase of this study, which was an experimental design that evaluated KAB of

grade 7 – 10 students of the same school at baseline and post-video intervention.

Population

The study was conducted in Ramon Magsaysay High School, Sampaloc Manila, which was chosen due to the large student population and proximity of the school to UST. Study subjects from Grade 7 – 10 were randomly selected by their head teachers per batch for both phases of the study.

The first set of participants, 5 from each year level (total n=20), were randomly selected for the validation and reliability testing of the adapted questionnaire. Two hundred participants were recruited for the pre- and post-intervention evaluation of the hearing loss prevention video. Students who previously participated in the first part of this study (questionnaire validation), were excluded.

Inclusion and exlusion criteria

Participants should be high school students who consented to participate in the study, enrolled in Ramon Magsaysay High School for the school year 2017 – 2018.

From the first phase of this study, 20 participants completed the validation and reliability testing. The investigators terminated the participation of 45 out of 200 students, due to incompletely answered questionnaires or for being absent during one of the sessions. No follow up with the investigators

were required after the scheduled sessions had passed. Previous data obtained were automatically considered null and void.

Sample size

The first phase needed 10 subjects as a standard sample size for validation studies. For the experimental study, Slovins formula was used to compute for the sample size using the average total of 5000 students enrolled in grade 7 – 10 in Ramon Magsaysay High School with an estimated error of 10%. Wherein,

$$n=N/(1+Ne^2)$$

Where: **N=5000 students;**

Error=10%;

$$n=5000/(1+5000(0.10^2)$$

Using this formula, the result shows that the experimental study needed at least 99 students. Both phases had more than required number of sample size to ensure quality of the study despite possible dropouts.

Questionnaire validation and reliability testing

The questionnaire (Appendix A) on Knowledge, Attitudes, and Behaviors towards Hearing Loss Prevention by Saunders, et al (2014) was adapted and locally validated in the first phase of this study. An approval from the author to download, use, and translate the questionnaire was first obtained via electronic mail (Appendix E). The original questionnaire (Appendix) consists of 16 items

on knowledge, 22 for attitudes, and 11 items with follow up questions for behaviors.

An expert committee consisting of an adolescent pediatrician, otorhinolaryngologist, audiologist, and child psychologist were tasked to assess the appropriateness of the questions for age and aptness of the questions.

Out of the 49 items, a total of 23 items were retained in the adapted questionnaire. This consisted of 10 items for knowledge, 9 items for attitudes, and 4 items for behavior. Items that were deemed not applicable to the local setting and population were deleted. The behavior portion was organized into a table format, and excessive follow up questions were narrowed down.

Translation of the questionnaire into the Filipino language was done by Komisyon ng Wikang Pilipino. However, some of the semantics were not conversational and does not equate to the english version.

The adapted questionnaire underwent five revisions. Each student who answered were given comments page at the back of the questionnaire to write their comments regarding the questionnaire. A suggestion from participants to remove the Filipino translation was applied during the validation process.

Cronbach's Alpha was used to determine the level of internal consistency of the adapted questionnaire. The final version of the adapted questionnaire was locally validated among 19 High School students from Ramon Magsaysay High School, who met the inclusion criteria and signed the informed consent form (ICF), with consent taken from parents. The same set of students answered the final version of the questionnaire after 1 week.

Video Intervention

A video was created with the aim to increase awareness of the participants as well as improve attitudes and behaviors toward hearing loss prevention. This was reviewed and approved by the authors and consultants from the department of Pediatrics and Otorhinolaryngology.

The video clip runs 6 minutes, with a mix of information graphics and an actual inspirational interview with an adolescent having hearing loss. The main contents of the video were causes, types, and effects of hearing loss.

Experimental Study

A total of 200 students were recruited for the pre- and post- video intervention questionnaire administration. All participants answered the pre-video intervention questionnaire as pre-test. After the pre-test, the 6-minute long video clip was shown, and the post-video intervention questionnaire was administered as post-test. Only 155 participants completed the study. Dropouts were due to incomplete responses in either/both questionnaires or did not answer the questionnaire after watching the video.

Statistical Analysis

The study used the following analysis: Cronbach's Alpha for testing the internal consistency and reliability of the questions, Wilcoxon-signed rank test to determine significant difference between the pre- and post-test of responses from the same group of subjects. The null hypothesis for Wilcoxon-signed rank test is that the median difference between pairs of observations is zero.

VI. RESULTS

Questionnaire validation and reliability testing

The 19 participants had an age range of 12 – 17 years old, with male to female ratio of 1:5.3. There were 5 participants from each grade 8, 9, and 10; and 4 participants for grade 7 participated in this first phase of the study. (Table 1)

Demographic Profile	Descriptive Statistics
Age (Range)	12 – 17 years old
Sex (Frequency, %)	
Male	N=3 (16%)
Female	N=16 (84%)
Year Level	
Grade 7	N=4 (22%)
Grade 8	N=5 (26%)
Grade 9	N=5 (26%)
Grade 10	N=5 (26%)

Table 1. Demographic Profile of Students who participated in the first phase of the study

In the attitude portion, the Cronbach's alpha was 0.71. The value was higher than 0.70 hence the questions pertaining to attitude was internally reliable. However, to further improve the internal reliability of the questionnaire, question number 8 was deleted. This resulted to a Cronbach's alpha of 0.741. (Table 2)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	21.8750	11.850	.540	.480
Q2	22.6875	14.229	.244	.566
Q3	22.3750	11.717	.595	.466
Q4	21.1875	13.496	.546	.513
Q5	21.4375	12.396	.452	.507
Q6	21.0625	12.196	.659	.468
Q7	22.4375	17.063	-.205	.650
Q8	21.6875	19.163	-.418	.741
Q9	21.6250	12.650	.372	.530
Q10	22.4375	13.863	.308	.551

Table 2. Statistical Analysis of Attitudes portion of the questionnaire

In the Behavior portion, this portion was broken down into 4 questions with each having its own scale of measurement; hence separate Cronbach's alphas were obtained for each question item. Individual statistics per number showed that all of the measures were greater than 0.70, hence the question items under each number for behavior are all useful as a reliable tool to measure the subjects' behavioral aspect towards hearing loss prevention. (Table 3)

Behavior	Cronbach's Alpha
Q20	0.876
Q21	0.957
Q22	0.704

Table 3. Statistical Analysis of Behaviors portion of the questionnaire

Experimental Study

A total of 155 students completed this experimental study, with majority of students coming from the grade 10 level, comprising 52% (n=81) of the total population. Grade 7 represented 22% (n=34), grade 8 at 12% (n=19), and grade 9 at 14% (n=21). The age range of our participants was 12 – 17 years old, while the male to female ratio was 1:1.8 (male=56, 36%; female=99, 64%). (Table 4)

Demographic Profile	**Descriptive Statistics**
Age (Range)	12 – 17 years old
Sex (Frequency, %)	
Male	N=56 (36%)
Female	N=99 (64%)
Year Level	
Grade 7	N=34 (22%)
Grade 8	N=19 (12%)
Grade 9	N=21 (14%)
Grade 10	N=81 (52%)

Table 4. Demographic Profile of Students

The mean responses for the pre- and post- video intervention were subjected to Wilcoxon-signed rank test to determine significant difference between the pre- and post- intervention KAB from the same subjects towards hearing loss prevention. P-values that are less then the level of significance (Confidence Interval=95%, $p<0.05$) would be interpreted as having significant change.

Our data showed the comparison of knowledge level of participants as influenced by the use of a video intervention. It can be seen that the average score for the pre test was 5.98 ± 1.55 denoting that participants were somewhat knowledgable, while posttest score revealed that the score increased to

6.08±1.67. However, there was no significant difference between the knowledge before and after the video presentation. (p-value = 0.346). (See Table 5)

Knowledge	N	Mean	Standard Deviation	Description	W	P-value
Pre Test	155	5.97	1.55	Somewhat Knoweldgeable	-0.942	0.346
Post Test	155	6.08	1.65	Somewhat Knoweldgeable		

Table 5. Comparison of the students' knowledge

There was significant difference between the pre- and post- video intervention test on the attitude level of participants (p=0.019, CI=95%). A Likert scale was used to determine agreeability of the participants, which was the gauge of improvement. It can be seen that the average score for the pre-test was 2.35±0.32 denoting that participants were agreeable while posttest scores revealed that the participants became more agreeable at 2.28±0.39. (Table 6)

Attitude	N	Mean	Standard Deviation	Description	W	P-value
Pre Test	155	2.35	0.32	Agree	-2.346	0.019
Post Test	155	2.28	0.39	Agree		

Table 6. Comparison of the students' attitudes

For the behaviors of the participants, the average score for the pre-test was 2.80±0.71 denoting that patients neither agreed nor disagreed, while posttest score revealed that the score increased to 2.81±0.83, still on the neutral level. The test revealed that the associated probability of 0.302 was

greater than the level of significance, but this did not show statistically significant change as well.

Behavior	N	Mean	Standard Deviation	Description	W	P-value
Pre Test	155	2.80	0.71	Neutral	-1.031	0.302
Post Test	155	2.81	0.83	Neutral		

Table 7. Comparison of the students' behaviors

VII. DISCUSSION

This study was able to culturally validate the first adapted questionnaire on KAB towards hearing loss prevention in the Philippines, which had shown good internal consistency and reliability among adolescents aged 13 – 17 in Manila. This questionnaire could now be utilized to obtain KAB among Filipino adolescents at baseline or as a tool to evaluate an intervention, as was done in this study. When administered for baseline KAB determination, interventions could be specifically patterned according to the population's needs hence providing the necessary intervention to halt further hearing loss development.

The video intervention utilized in this study proved to be effective in creating statistically significant change in attitudes towards hearing loss prevention (CI=95%, $p<0.05$, $p=0.019$). The study done by Keppler et al. last 2016 found that subjects who had more anti-noise attitudes also reported use of hearing protection in any noise activity.[15] A cohort focusing on NIHL done among Flemish high school students done last 2014 evaluated a governmental campaign focusing on harmful effects of recreational noise, showed that

subjects had more negative attitude toward noise and a concurrent more positive attitude towards hearing protection.[16] These findings were consistent with the Theory of Planned Behavior, which states that the intention of an individual to carry out a behavior is dependent on the person's attitude on the behavior, subjective norms, and perceived behavioral control.[15] The behavior portion of the questionnaire which was answered immediately after the video showing could have had improved results if it were answered after ample time to apply what they have learned from the video.

For the knowledge portion, there could have been a significant improvement when the participants had other sources of education on hearing loss prevention. A recommendation by Lass et al. in 1987, recommended that education towards hearing loss prevention consists of instructions on normal auditory mechanisms, types of hearing loss and their causes, noise and its effect on hearing, warning signs of NIHL, and specific recommendations for preventing NIHL. In 1991, Anderson added that the consequences of hearing loss and how it can affect life quality and which type of noise or noisy activities should be included.[18] Several interventions have been created in other areas of the world that utilize lectures, combination of lectures and videos, actual models, and activities conducted to further understand concepts of hearing.

VIII. CONCLUSION

Overall, this study was able to develop something new and vital to the Filipinos, especially to the adolescent population, doctors, and researchers.

Our locally validated questionnaire on Knowledge, Attitudes, and Behaviors towards hearing loss prevention from Saunders, et al (2014) had an acceptable reliability and internal consistency (Cronbach's alpha > 0.7). The novel video-based intervention on hearing loss prevention utilized in our study had shown to improve the attitudes of Filipino adolescents, with an average score of 2.28±0.39 for posttest from a pretest score of 2.35±0.32, with an associated probability of 0.019. Thus implicating significant change towards the more positive attitude.

IX. RECOMMENDATIONS

We recommend a follow up questionnaire administration to the same participants after 4 – 6 weeks, to check for retention, and for comparison of their behavior after ample time to possibly apply what they have learned from watching the video. A revision of the video could also be considered, to tackle additional knowledge, devise more ways to improve behaviors through the video, and replicate the experimental portion of this study involving more institutions to further evaluate and strengthen our intervention and promote hearing loss prevention in the process. However, any institution can already utilize the video itself to promote hearing loss prevention.

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APPENDIX A – BASIC INFORMATION SHEET

Name: _____ **No. _____**
Age/Sex: _____
Birthday (mm/dd/yy): _____
Nationality: _____
Address: _____

Name: _____ **No. _____**
Age/Sex: _____
Birthday (mm/dd/yy): _____
Nationality: _____
Address: _____

Name: _____ **No. _____**
Age/Sex: _____
Birthday (mm/dd/yy): _____
Nationality: _____
Address: _____

Name: _____ **No. _____**
Age/Sex: _____
Birthday (mm/dd/yy): _____
Nationality: _____
Address: _____

Name: _____ **No. _____**
Age/Sex: _____
Birthday (mm/dd/yy): _____
Nationality: _____
Address: _____

APPENDIX B – Questionnaire by Saunders, et al.

Knowledge, Attitudes and Behaviors Questionnaire (KAB)
Pre-intervention Questionnaire

Adapted from Saunders, et al. (2014)

	Knowledge	**I <u>know</u> this is True**	**I <u>think</u> this is True**	**I'm not sure**	**I <u>think</u> this is False**	**I <u>know</u> this is False**
1.	If I'm around loud sounds often, my ears can adjust and help protect my hearing.					
2.	Sounds measuring 85 decibels (Noise from heavy city traffic) can damage human hearing.					
3.	Sounds that are too loud can damage the **ear canal**.					
4.	Sounds that are too loud can damage the **hair cells in the inner ear.**					
5.	People with hearing loss caused by loud sounds can hear normally again if they wear a hearing aid.					
6.	People with hearing loss caused by loud sounds can hear normally again if they turn up the volume.					
7.	The background sound is too loud if you can't hear someone speaking who is three feet away (arm's length).					
8.	When people wear earplugs correctly, they will not hear a difference in the loudness of the noise when they cover their ears.					
9.	Hearing protection isn't as useful for people with hearing loss.					
10.	Hearing an extremely loud sound just once can cause someone to lose some hearing.					

11.	A good way for people to protect their hearing from loud sounds is to put cotton or tissue in their ears.					
12.	A good way for people to protect their hearing from loud sounds is to wear headphones or ear buds.					
Attitude		**I <u>strongly</u> agree**	**I <u>somewhat</u> agree**	**I'm not sure**	**I <u>somewhat</u> disagree**	**I <u>strongly</u> Disagree**
13.	I am often around sounds that are loud enough to damage my hearing.					
14.	If hearing protection was around when I needed it, I would use it.					
15.	Having a hearing loss would limit my social activities.					
16.	It's difficult for me to stay away from loud sounds (music, machine noise, et.) even when I think it's too loud.					
17.	The advantages of protecting my hearing are greater than the disadvantages.					
18.	I know where to go to buy hearing protection.					
19.	It's too much trouble to remember to wear hearing protection.					
20.	Earplugs are uncomfortable.					
21.	People with hearing loss do just fine.					
22.	I see value in spending money to protect my hearing.					
23.	I'm used to loud noises, so I'm not worried that more time in noisy places will harm my hearing.					

24.	My lifestyle makes it difficult for me to protect my hearing.					
25.	I am confident that I know how to use hearing protection properly.					
26.	Good hearing is needed for good communication.					

Questions on BEHAVIORS:

26. How often do you ride a motorcycle, jetski, etc?
- □ Never → go to #41
- □ A few times a year
- □ A few times a month
- □ A few times a week
- □ Almost every day

26a. On average, how long do you ride them each time? (check one)
- □ Less than 30 minutes
- □ About 1 hour
- □ About 2 hours
- □ About 3 hours
- □ About 4 hours or more

26b. Do you use hearing protection when riding your motorcycle/jet ski/snowmobile, etc?

□ **Yes** → Why? (Check all that apply)
- □ It's required
- □ It helps protect my hearing
- □ It helps me concentrate

□ **No** → Why? (Check all that apply)
- □ I don't think about using it
- □ It's not worth the time/effort
- □ I don't hear well enough with it
- □ I don't think my tools are loud enough
- □ It's too expensive.
- □ I don't think it works.
- □ It doesn't seem worth it for a short time

□ **Sometimes.**

When I do, why? (check all that apply)
- □ It's required
- □ It helps protect my hearing
- □ It helps me concentrate
- □ Other _____

When I don't, why not? (check all that apply)
- □ I don't think about using it
- □ It's not worth the time/effort
- □ I don't hear well enough with it
- □ I don't think my tools are loud enough
- □ It's too expensive
- □ I don't think it works
- □ It doesn't seem worth it for a short time
- □ I use stereo headphones instead
- □ I use my finger instead

26c. After riding these machines, how often do you have ear pain or "ringing" sounds in your ears?

□ Always □ Often □ Sometimes □ Rarely □ Never

27. How often do you hear a gun fired?

□ Never → go to #28
- □ A few times a year
- □ A few times a month
- □ A few times a week
- □ Almost every day

27a. On average, how many rounds do you hear it fired each time? (check one)
- □ 1 – 5
- □ 6 – 15
- □ 16 – 25
- □ 26 or more

27b. Do you use hearing protection when you hear a gun fired?

□ **Yes** → Why? (Check all that apply)
- □ It's required
- □ It helps protect my hearing
- □ It helps me concentrate

□ **No** → Why? (Check all that apply)
- □ I don't think about using it
- □ It's not worth the time/effort
- □ I don't hear well enough with it
- □ I don't think my tools are loud enough
- □ It's too expensive.
- □ I don't think it works.
- □ It doesn't seem worth it for a short time

□ **Sometimes.**

When I do, why? (check all that apply)
- □ It's required
- □ It helps protect my hearing
- □ It helps me concentrate
- □ Other _____

When I don't, why not? (check all that apply)
- □ I don't think about using it
- □ It's not worth the time/effort
- □ I don't hear well enough with it
- □ I don't think my tools are loud enough
- □ It's too expensive
- □ I don't think it works
- □ It doesn't seem worth it for a short time
- □ I use stereo headphones instead
- □ I use my finger instead

27c. After hearing a gun fired, how often do you have ear pain or "ringing" sounds in your ears?

□ Always □ Often □ Sometimes □ Rarely □ Never

28. How often do you ride in an automobile with music playing?
- ☐Never →go to #44
- ☐A few times a year
- ☐A few times a month
- ☐A few times a week
- ☐Almost every day

28a. On average, how long do you ride in an automobile with music playing each time?
- ☐Less than 30 minutes

☐About 1 hour
☐About 2 hours
☐About 3 hours
☐About 4 hours or more

28b. On average, what do you set the volume level to?

☐Soft ☐Moderate ☐Moderately Loud ☐Very Loud

28c. After playing music in an automobile, how often do you have ear pain or "ringing" sounds in your ears?

☐Always ☐Often ☐Sometimes ☐Rarely ☐Never

29. How often do you play musical instruments or sing in a band or choir?

☐Never →go to #30
☐A few times a year
☐A few times a month
☐A few times a week
☐Almost every day

29a. On average, for how long during those times? (check one)

☐Less than 30 minutes
☐About 1 hour
☐About 2 hours
☐About 3 hours
☐About 4 hours or more

29b. I typically play the following instruments. (check all that apply)

☐ Strings ☐ Brass ☐ Electric guitar
☐ Sing ☐ Woodwind ☐ Percussion
☐ Acoustic guitar ☐ Piano ☐Other _____

29c. Do you use hearing protection when playing your instruments or singing?

□ **Yes** → Why? (Check all that apply)
□ It's required
□ It helps protect my hearing
□ It helps me concentrate

□ **No** → Why? (Check all that apply)
□ I don't think about using it
□ It's not worth the time/effort
□ I don't hear well enough with it
□ I don't think my tools are loud enough
□ It's too expensive.
□ I don't think it works.
□ It doesn't seem worth it for a short time

□ **Sometimes.**
When I do, why? (check all that apply)
□ It's required
□ It helps protect my hearing
□ It helps me concentrate
□ Other _____
When I don't, why not? (check all that apply)
□ I don't think about using it
□ It's not worth the time/effort
□ I don't hear well enough with it
□ I don't think my tools are loud enough
□ It's too expensive
□ I don't think it works
□ It doesn't seem worth it for a short time
□ I use stereo headphones instead
□ I use my finger instead

29d. After playing musical instruments/singing, how often do you have ear pain or "ringing" sounds in your ears?

☐Always ☐Often ☐Sometimes ☐Rarely ☐Never

30. How often do you go to concerts/musical events?

☐Never →go to #31
☐A few times a year
☐A few times a month
☐A few times a week

31a. On average, what level is the music at these events?

☐Soft ☐Moderate ☐Moderately Loud ☐Very Loud

31b. What types of musical events do you typically attend? (check all that apply)
☐ Rock / Pop
☐ Heavy metal / Punk
☐ Jazz / Blues ☐Folk / Country
☐ Hip-Hop/Rap ☐Classical / Opera

32c. Do you use hearing protection at concerts?

□ **Yes** → Why? (Check all that apply)
□ It's required
□ It helps protect my hearing
□ It helps me concentrate

□ **No** → Why? (Check all that apply)
□ I don't think about using it
□ It's not worth the time/effort
□ I don't hear well enough with it
□ I don't think my tools are loud enough
□ It's too expensive.
□ I don't think it works.
□ It doesn't seem worth it for a short time

□ **Sometimes.**
When I do, why? (check all that apply)
□ It's required
□ It helps protect my hearing
□ It helps me concentrate
□ Other _____
When I don't, why not? (check all that apply)
□ I don't think about using it
□ It's not worth the time/effort
□ I don't hear well enough with it
□ I don't think my tools are loud enough
□ It's too expensive
□ I don't think it works
□ It doesn't seem worth it for a short time
□ I use stereo headphones instead
□ I use my finger instead

32d. After attending concerts, how often do you have ear pain or "ringing" sounds in your ears?

☐Always ☐Often ☐Sometimes ☐Rarely ☐Never

33. How often do you use earphones (iPod, mp3 player, etc)?

☐Never →go to #34
☐A few times a year
☐A few times a month
☐A few times a week
☐Almost every day

33a. On average, how long do you use your earphones each day? (check one)

☐Less than 30 minutes
☐About 1 hour
☐About 2 hours
☐About 3 hours
☐About 4 hours or more

33b. On average, what do you set the volume level to?

☐Soft ☐Moderate ☐Moderately Loud ☐Very Loud

33c. After using headphones how often do you have ear pain or "ringing" sounds in your ears?

☐Always ☐Often ☐Sometimes ☐Rarely ☐Never

34. How often do you work in a noisy environment?

☐Never →go to #49
☐A few times a year
☐A few times a month
☐A few times a week
☐Almost every day

34a. On average, what level is the sound in this environment?

☐Soft ☐Moderate ☐Moderately Loud ☐Very Loud

34b. Do you use hearing protection?

□ **Yes** → Why? (Check all that apply)
□ It's required
□ It helps protect my hearing
□ It helps me concentrate

□ **No** → Why? (Check all that apply)
□ I don't think about using it
□ It's not worth the time/effort
□ I don't hear well enough with it
□ I don't think my tools are loud enough
□ It's too expensive.
□ I don't think it works.
□ It doesn't seem worth it for a short time

□ **Sometimes.**
When I do, why? (check all that apply)
□ It's required
□ It helps protect my hearing
□ It helps me concentrate
□ Other _____
When I don't, why not? (check all that apply)
□ I don't think about using it
□ It's not worth the time/effort
□ I don't hear well enough with it
□ I don't think my tools are loud enough
□ It's too expensive
□ I don't think it works
□ It doesn't seem worth it for a short time
□ I use stereo headphones instead
□ I use my finger instead

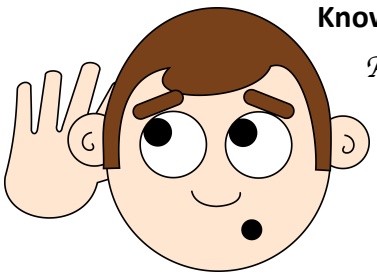
34c. After being at work, how often do you have ear pain or "ringing" sounds in your ears?

☐Always ☐Often ☐Sometimes ☐Rarely ☐Never

35. Over the past year, I have been in other loud environments that are not listed here.

Yes☐ No☐

APPENDIX C – Adapted Questionnaire



Knowledge, Attitudes and Behaviors Questionnaire (KAB)

Adapted from Gabrielle H. Saunders, et al. (2014)

Total no. of items: 23: 1 – 10 Knowledge
11 – 19 Attitudes
20 – 23 Behavior



Knowledge	Yes	No
1. **If I'm around loud sounds often, my ears can adjust and help protect my hearing.**	☐	☐
2. **Sounds measuring 85 decibels (Noise from heavy city traffic) can damage human hearing.**	☐	☐
3. **Sounds that are too loud can damage the hair cells in the inner ear.**	☐	☐
4. **People with hearing loss caused by loud sounds can hear normally again if they wear a hearing aid.**	☐	☐
5. **People with hearing loss caused by loud sounds can hear normally again if they turn up the volume.**	☐	☐
6. **The background sound is too loud if you can't hear someone speaking who is three feet away (arm's length).**	☐	☐
7. **Hearing protection isn't as useful for people with hearing loss.**	☐	☐
8. **Hearing an extremely loud sound just once can cause someone to lose some hearing.**	☐	☐
9. **A good way for people to protect their hearing from loud sounds is to put cotton or tissue in their ears.**	☐	☐
10. **A good way for people to protect their hearing from loud sounds is to wear headphones or ear buds.**	☐	☐

II. Attitude	I strongly agree	Agree	Disagree	I strongly disagree
11. I am often around sounds that are loud enough to damage my hearing.	☐	☐	☐	☐
12. If hearing protection was around when I needed it, I would use it.	☐	☐	☐	☐
13. It's difficult for me to stay away from loud sounds (music, machine noise, et.) even when I think it's too loud.	☐	☐	☐	☐
14. It's too much trouble to remember to wear hearing protection.	☐	☐	☐	☐
15. Earplugs are uncomfortable.	☐	☐	☐	☐
16. People with hearing loss do just fine.	☐	☐	☐	☐
17. I see value in spending money to protect my hearing.	☐	☐	☐	☐
18. My lifestyle makes it difficult for me to protect my hearing.	☐	☐	☐	☐
19. I am confident that I know how to use hearing protection properly.	☐	☐	☐	☐

III. Questions on BEHAVIORS:

20. How often do you use hearing protection while..

	Very Often	Often	Sometimes	Seldom	Never
a. Riding a motorcycle/tricycle?	☐	☐	☐	☐	☐
b. Riding a car with music playing?	☐	☐	☐	☐	☐
c. Playing musical instruments/singing in a band/ videoke/karaoke?	☐	☐	☐	☐	☐
d. Attending concerts?	☐	☐	☐	☐	☐
e. Using headsets/earphones for listening to music or watching movies?	☐	☐	☐	☐	☐

21. How often do you have ear pain or "ringing" sounds in your ears while..

	Very Often	Often	Sometimes	Seldom	Never
a. Riding a motorcycle/tricycle?	☐	☐	☐	☐	☐
b. Riding a car with music playing?	☐	☐	☐	☐	☐
c. Playing musical instruments/singing in a band/ videoke/karaoke?	☐	☐	☐	☐	☐
d. Attending concerts?	☐	☐	☐	☐	☐
e. Using headsets/earphones for listening to music or watching movies?	☐	☐	☐	☐	☐

22. How often do you set the volume very loud?

	Very Often	Often	Sometimes	Seldom	Never
a. Riding a car with music playing?	☐	☐	☐	☐	☐
b. Playing musical instruments/singing in a band/ videoke/karaoke?	☐	☐	☐	☐	☐
c. Using headsets/earphones for listening to music or watching movies?	☐	☐	☐	☐	☐

23. Over the past year, I have been in other loud environments that are not listed here.

☐ Yes ☐ No

APPENDIX D – Video Guide Questions

Introduction: random clips of rock concerts, people hurt while using cotton buds, gadgets, famous music/video applications used by the current generation, examination of the ears

Guide questions in English (E) and Filipino(F):

1. **E: What is the first thing that came to your mind when you found out that you have hearing loss? Why?**
   F: *Ano ang una mong naisip noong sinabi saiyo na bingi ang isa mong tainga? Bakit?*
2. **E: Before you have it, did you think that you will one day have hearing loss? Why?**
   F: *Bago mo ito nalaman, naisip mo na ba dati na mabibingi ka balang araw? Bakit?*

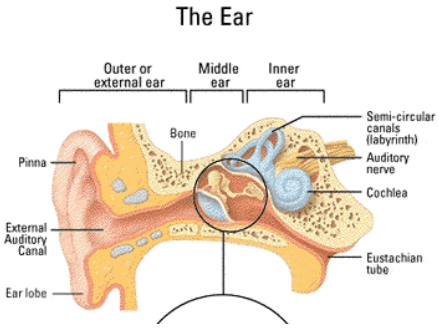
Infographics:

E: Hearing impairment can happen to anyone and teens are particularly susceptible because of certain high risk habits.

F: *Sinu ang puwedeng mabingi? – kahit sino, kahit ilang taon, lalo na ang nag-dadalaga at nagbibinata dahil sa ilang ugaling mapanganib*

3. **E: What do you think is/are the cause/s of it?**
   F: *Ano sa tingin mo ang mga sanhi ng pagpapahina ng pandinig?*

Infographics: (insert photo/video to introduce general parts of the ear)



- E: Types of hearing loss in a nutshell
  - Sensorineural hearing loss – involves inner ear
  - Conductive hearing loss – involves middle ear
  - Mixed – both are involved

  F: *Ang iba't ibang klase ng pagkabingi sa maikling sabi*
  - Sensorineural hearing loss – *kasangkot ang panloob ng tainga*
  - Conductive hearing loss – *kasangkot ang gitnang tainga*
- E: Most common causes of hearing loss in adolescents

- Otitis Media with Effusion
- Excessive noise

F: *Ang pinaka-karaniwang dahilan ng pagkabingi sa mga nagbibinata't nagdadalaga*

- *Impeksiyon sa gitna ng tainga na may kasabay na pagbubuhos*
- *Labis na ingay*

- E: Barriers to protect hearing
  - Unawareness of complications and possible long-term impact
  - Peer pressure
  - High risk taking behavior

  F: *Mga hadlang para protektahan ang pandinig*
  - *Walang kamalayan sa komplikasyon at posibleng pangmatagalang epekto*
  - *Puwersa ng kaibigan*
  - *Ang ugaling mahilig sa gawaing mapanganib*

4. **E: What problems have you encountered during this difficulty in hearing?**

   F: *Umpisa noong humina ang iyong pandinig, anung mga problema ang iyong hinarap?*

Infographics:

- E: Effect of hearing loss to education performance, socializing with peers, self esteem

  F: *Ang naaapektohan ng mahinang pandinig: mas mababang grado sa pag-aaral, mababang pagpapahalaga sa sarili, at hindi makasalamuha sa mga kaibigan*
- E: It has potential costs:
  - More expensive cumulative educational costs
  - Psychosocial (loss of productivity, social isolation, stigma, communication difficulties, add a further $573 billion each year as compensation to costs)

- Economical (health care sector: $67 – 107 billion, in addition to providing hearing equipments)

F: *Mayroong potensyal na gastos ang paghina ng pandinig:*

- *Mas mahal ang kabuuan na gastos sa pag-aaral – $13.9 bilyon*
- *Psychosocial (bawas ang pagiging produkibo, paghihiwalay ng sarili sa lipunan, magkakamantsa ang pangalan, hirap sa pakikitungo, makakdagdag ng $573 bilyon bawat taon)*
- *Ekonomiko (sa sektor ng pangangalaga sa kalusugan $67 – 107 bilyon, at saka mga gastos sa hearing aid o iba pang makakatulong sa pagbuti ng pandinig)*

5. **E: How did you overcome these problems brought about by hearing impairment?**

   F: *Paano mo daigin ang mga problemang dala ng pagkahina ng pandinig?*

Infographics:

- E: What should we do when we start to have symptoms?
  - Consult a doctor!

  F: *Ano ang dapat nating gawin pag may hinala ng problema sa pandinig?*
  - *Kumunsulta sa doktor*

6. **E: What are your realizations after this incident happened to you? Why?**

   F: *Pagkatapos mo magkaproblema sa pandinig, ano ang mga napagtanto mo? Bakit?*

Infographics:

- E: Each of us can properly care for our ears and eventually preserve our hearing.

  F: *Kaya natin alagaan ang sarili nating tainga nang mapanatili ang pandinig.*
- E: What is the right way of cleaning ears?
  - Proper ear and hearing care is easy, and people can be self-reliant about it.

- Do not use cotton buds to avoid pushing earwax further inside the ear.
- To clean ears, use a soft cloth or towel to wipe only the visible external area of the ear.
- Do not put anything inside the ear, because this might cause infection.

F: *Paano ba ang tamang paglinis ng tainga?*

- *Madali lang! Kayang – kaya natin itong gawin mag-isa!*
- *Huwag gagamit ng cotton buds upang maiwasan lumubog lalo ang tutuli sa tainga.*
- *Upang malinisan ng tama ang tainga, gumamit lang ng malambot na bimpo o tela para punasan ang labas ng tainga.*
- *Huwag maglalagay ng kahit anong bagay sa tainga dahil ito ay pwedeng maging sanhi ng impeksyon.*

- E: Why should we protect ears
  - People with better hearing, like those with better eyesight, have better lives. They can communicate more easily, have a better quality-of-life for longer. They don't need special equipment to be able to communicate, more independent even in their elder years

F: *Bakit ba natin dapat alagaan ang ating pandinig?*

- *Ang mga taong may magandang pandinig, tulad lang ng mga taong may maayos na paningin, ay mayroong mas magandang buhay. Kaya nilang makitungo ng walang kahirap hirap sa ibang tao. Hindi nila kailangan ng kagamitan na mahal para lang makitungo ng maayos sa ibang tao, at kaya nilang hindi umasa sa ibang tao habang nagkakaedad.*

Prepared by: Thaddeus Cabatana and the authors

Reference: World Hearing Day, World Health Organization, 2017

UNIVERSITY OF SANTO TOMAS HOSPITAL
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Email: *usth_irb@yahoo.com.ph*

05 October 2017

MARY JANE TIFFANY L. GO, MD
Resident-in-Training/Principal Investigator
Department of Pediatrics
University of Santo Tomas Hospital

Re: Approval Letter to the Review of Resubmitted Protocol
Protocol Reference No.: IRB-2017-06-118-TR
Protocol No./Title: "Impact of a Video-Based Intervention on the Knowledge, Attitudes and Behaviors Towards Hearing Loss Prevention Among High-School Students in Ramon Magsaysay High School, Manila"

Dear **Dr. Go:**

The **UST Hospital - Institutional Review Board (USTH-IRB)** would like to inform you that you that the revisions in relation to the above-titled research protocol submitted last **31 August 2017** has been assessed and **approved** through **expedited review.**

Please be reminded of the following investigator's responsibilities after approval:

- Conduct the study in strict accordance with the current IRB-approved research protocol and/or informed consent forms
- Comply with all relevant international and national guidelines and regulations
- Abide by the principles of good clinical practice and ethical research
- Submit document amendments for USTH-IRB review and approval before its implementation
- Report protocol deviation/violation (if applicable)
- Submit final report after completion of protocol procedures at the study site

This ethical clearance is valid until **05 October 2018.** Application for renewal of ethical clearance should be thirty (30) days before the approval expiration date through submission of **USTH-IRB Continuing Review Application Form** (if the study will continue beyond expiration date of ethical clearance).

Please note that **IRB forms** may be requested through ***usth_irb@yahoo.com.ph.***
For the Institutional Review Board: