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Mesenteric Bowel Ischaemia

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Highlights

Rare Presentation for Breast Cancer

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VOLUME 20 ISSUE 11 VERSION 1.0



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CONTENTS OF THE ISSUE

- i. Copyright Notice
 - ii. Editorial Board Members
 - iii. Chief Author and Dean
 - iv. Contents of the Issue
-
1. Breast to Bowel: Mesenteric Bowel Ischaemia as a Rare Presentation for Breast Cancer in a Male. **1-5**
 2. COVID-19: Public Health Implications among Healthcare Workers in a Tertiary Health Facility in Enugu State, Nigeria. **7-15**
 3. Infecciones de Piel Y Partes Blandas en Pacientes Internados en el Servicio De Clínica Médica del Hospital General Dde Luque en los Meses de Marzo 2017 a Agosto 2017. **17-29**
 4. Assessment of Helicopter Flyover Noise for Tonal Components. **31-59**
 5. Knowledge, Attitude, Risk and Fear Assessment of Health Professionals towards Covid-19 in Perspective of Workplace, Local and National Policy. **61-71**
-
- v. Fellows
 - vi. Auxiliary Memberships
 - vii. Preferred Author Guidelines
 - viii. Index



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Breast to Bowel: Mesenteric Bowel Ischaemia as a Rare Presentation for Breast Cancer in a Male

By Laura Constable, BSc, MBBS, Sam Cooper, MBBS, Philip Chan, MBBS,
Eugenia Ip, FRACS & Michael Law, FRACS

Introduction - Intestinal ischaemia is a surgical emergency requiring rapid diagnosis, with reported mortality rates of up to 50%.^{1,2} In patients presenting with intestinal ischaemia secondary to mesenteric venous thrombosis (MVT), over 50% were found to have a specific cause, including 13-16% secondary to underlying malignancy.^{1,3} We report an interesting case of breast cancer presenting acutely with mesenteric venous thrombosis and intestinal ischaemia.

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Breast to Bowel: Mesenteric Bowel Ischaemia as a Rare Presentation for Breast Cancer in a Male

Laura Constable, BSc, MBBS ^α, Sam Cooper, MBBS ^σ, Philip Chan, MBBS ^ρ, Eugenia Ip, FRACS ^ω
& Michael Law, FRACS [¥]

I. INTRODUCTION

Intestinal ischaemia is a surgical emergency requiring rapid diagnosis, with reported mortality rates of up to 50%.^{1,2} In patients presenting with intestinal ischaemia secondary to mesenteric venous thrombosis (MVT), over 50% were found to have a specific cause, including 13-16% secondary to underlying malignancy.^{1,3} We report an interesting case of breast cancer presenting acutely with mesenteric venous thrombosis and intestinal ischaemia.

II. CASE REPORT

An 81-year-old male presented with sudden, severe abdominal pain, haematemesis and fresh per rectal bleeding. He was haemodynamically unstable, in rapid atrial fibrillation (AF), and required intubation due to delirium. His only past medical history was a cerebrovascular accident 30 years prior to admission, with no regular medications. Examination revealed a generally tender soft abdomen. Investigations showed lactate of 3.8 mmol/L (0.5-2.2 mmol/L), INR 1.2 (0.9-1.2), PT 16.5 secs (12-16 secs) and a PTT 32secs (25-35 secs). Computed tomography (CT) scan demonstrated superior mesenteric venous thrombosis with a long (190cm) segment of ileal ischaemia, (Fig. 1) a focal thrombus in the atrial appendage and chronic pulmonary emboli. Intravenous (IV) heparin was commenced and he underwent an urgent exploratory laparotomy, in which 1.90 metres of necrotic small bowel was found and resected. (Fig. 2) A re-look laparotomy at 48 hours showed no further ischaemic bowel and side-to-side stapled anastomosis was performed. The patient remained stable in ICU.

Subsequent hypercoagulability investigations were equivocal including no mural thrombus seen on transthoracic echocardiogram. A systems review and detailed clinical examination however identified an inverted left nipple and palpable breast mass which was confirmed on left breast ultrasound as a 2.3 cm spiculated mass (breast imaging reporting and data system (BI-RADS) score 5, (Fig. 3). Core biopsy

confirmed a grade 2 invasive breast carcinoma (oestrogen/progesterone receptor +++ >90%, HER2 negative) and endocrine therapy was commenced after consultation with medical oncology. The patient was discharged to rehabilitation day 20 post-operatively on long term apixaban.

III. DISCUSSION

Mesenteric ischaemia accounts for 1:1000 acute hospital admissions with embolism being the most common aetiology. Mesenteric venous thrombosis (MVT) is responsible for 10% of cases and is associated with the highest mortality.^{1,4} Risk factors for mesenteric ischaemia include ischaemic heart disease, AF, hypertension, diabetes and kidney disease.^{1,5} Patients commonly present with pain out of proportion to clinical findings, associated with a new cardiac arrhythmia. First-line management for MVT is anticoagulation with heparin infusion.^{1,6}

In addition to patients having risk factors for mesenteric ischaemia, other risk factors or an inheritable thrombophilia is often identified.^{1,3,7} As demonstrated in this case, patients presenting with MVT should be thoroughly evaluated for other sites of thrombus as 50% of patients have pre-existing or current deep vein thrombosis or pulmonary embolism.⁸ Current guidelines also suggest that patients with MVT should be screened for hypercoagulability, including measuring Protein C, S, anti thrombin III and Factor V levels.⁷ Factor V Leiden is the most frequent hypercoagulable state and is found in 20-40% of MVT patients.¹ Other pre-disposing risk factors to consider include malignancy, portal hypertension, abdominal trauma, abdominal infection, acute pancreatitis, nephrotic syndrome, liver cirrhosis and splenomegaly.¹

Malignancy is reported in 13-16% of patients with MVT due to activation of the coagulation system,^{3,9} and should be considered as an underlying cause. Myeloproliferative malignancies are present in 8-18% of patients with MVT,⁷ but the authors are not aware of any studies to date that have examined differences in incidence of MVT in different malignancies.⁷ As such, no formal guidelines exist to guide investigations to exclude underlying malignancy and rely on a systems

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review in both history and clinical examination. This may result in unexpected changes in ongoing management as illustrated by this patient's unexpected breast cancer diagnosis which is rare in males, accounting for only 0.5-1% of cases.¹⁰ Whilst breast cancer has a lower reported risk when compared to other malignancies such as pancreatic, lung and stomach malignancies of causing venous thromboembolism (1-2%), this was the underlying cause for this patient's intestinal ischemia and acute surgical presentation.⁹

In summary, patients with intestinal ischemia, especially those caused by MVT, should be investigated for underlying thrombophilia, but if this is negative, be considered for underlying malignancy. Our case highlights the importance of thorough clinical examination, which may yield rare but critical diagnoses, such as breast cancer in a male patient.

IV. DISCLOSURE STATEMENT

The authors have no financial or conflicts of interest to declare.

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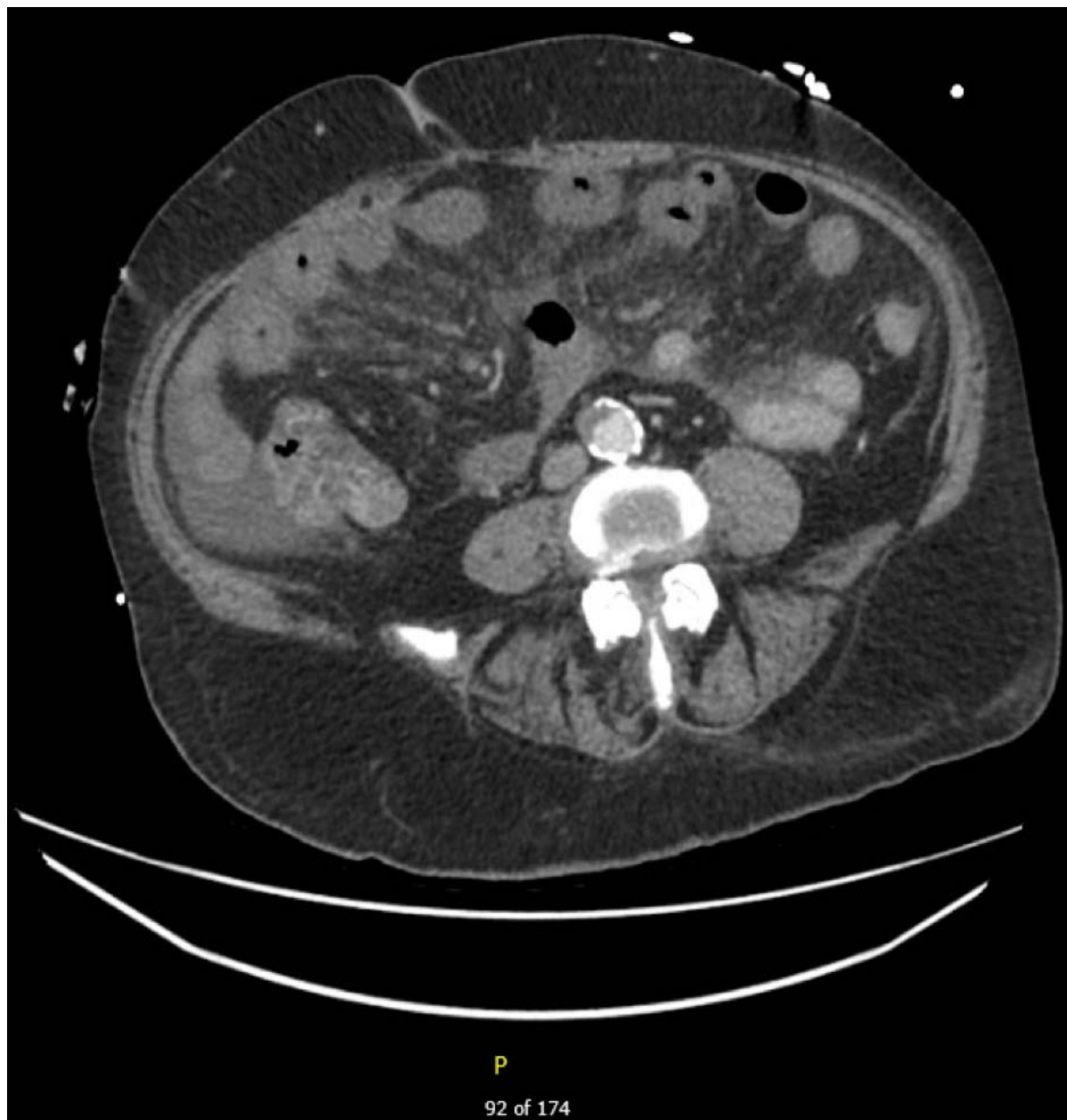


Figure 1: Computed tomography of the abdomen and pelvis with IV contrast demonstrating superior mesenteric venous thrombosis and non-viable small bowel loops.



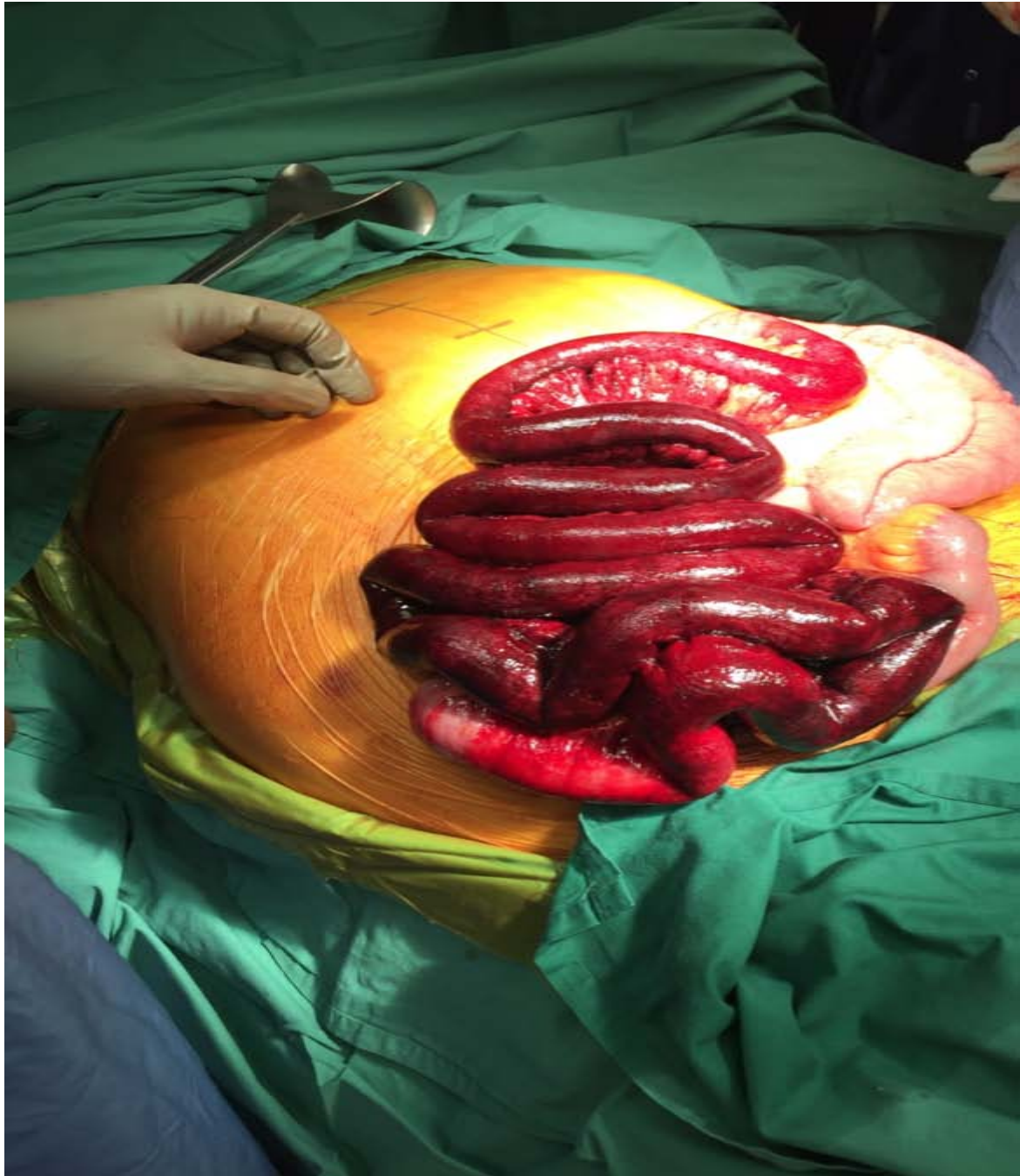


Figure 2: Intraoperative image at laparotomy with length of necrotic small bowel resected

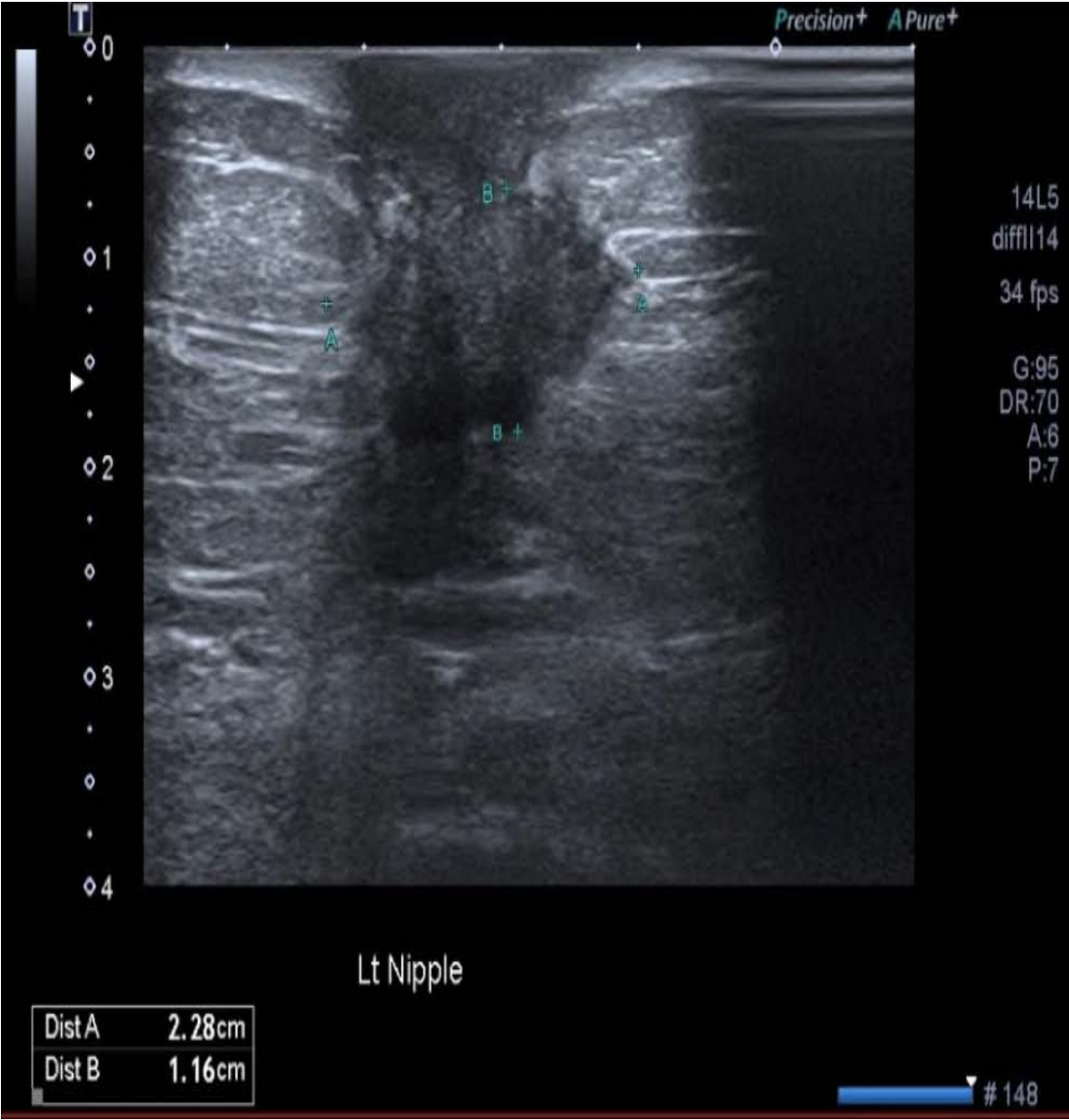


Figure 3: Ultrasound of left breast showing 2.3cm spiculated retroareolar mass

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COVID-19: Public Health Implications among Healthcare Workers in a Tertiary Health Facility in Enugu State, Nigeria

By Nwoga Hope O, Ajuba Miriam O & Ezeoke Uche E

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Abstract- Background: Coronavirus is one of the emerging respiratory viruses that are known to cause diseases in humans. It causes a range of illnesses ranging from the common cold to Severe Acute Respiratory Syndrome (SARS).

Objectives: To assess the knowledge, attitude, and practice of healthcare workers in a tertiary health facility towards COVID 19 pandemic and also the perceived barrier to the control of the infection in a healthcare setting.

Methodology: The study was a descriptive cross-sectional study that involved all the healthcare workers (HCWs); (doctors, nurses, laboratory scientists) working in a tertiary health facility. Data from the doctors and laboratory scientists were gathered with an online questionnaire formulated in Google form.

Keywords: COVID-19, healthcare workers, Enugu State, Nigeria, tertiary health facility.

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COVID-19: Public Health Implications among Healthcare Workers in a Tertiary Health Facility in Enugu State, Nigeria

Nwoga Hope O ^α, Ajuba Miriam O ^σ & Ezeoke Uche E. ^ρ

Abstract- Background: Coronavirus is one of the emerging respiratory viruses that are known to cause diseases in humans. It causes a range of illnesses ranging from the common cold to Severe Acute Respiratory Syndrome (SARS).

Objectives: To assess the knowledge, attitude, and practice of healthcare workers in a tertiary health facility towards COVID 19 pandemic and also the perceived barrier to the control of the infection in a healthcare setting

Methodology: The study was a descriptive cross-sectional study that involved all the healthcare workers (HCWs); (doctors, nurses, laboratory scientists) working in a tertiary health facility. Data from the doctors and laboratory scientists were gathered with an online questionnaire formulated in Google form. It was shared through their different online platforms (Whatsapp). Data from the nurses were collected using a semi-structured questionnaire given to all the nurses through the head nursing services. All the data were analyzed using SPSS version 25. Categorical variables were presented in the form of frequencies and percentages.

Results: Most of the HCWs were within 30-39 years of age (48.1%) and had worked for 11-20 years (45.5%). Majority were females (88.9%), married (86.0%) and nurses (82.1%). About 59.1% of the HCWs had good knowledge of COVID 19, while only 43.4% had a good attitude towards COVID 19. However, the majority (93.2%) of them had good practice towards COVID 19. The commonest perceived barrier to the control of infection was overcrowding in clinics, wards, and emergency rooms.

Conclusion: The knowledge and attitude of the HCWs in this study to COVID 19 was poor, but this did not affect their practice. There should be an orientation of the HCWs for attitudinal change towards the infection.

Keywords: COVID-19, healthcare workers, Enugu State, Nigeria, tertiary health facility.

1. INTRODUCTION

Coronavirus is one of the emerging respiratory viruses that are known to cause diseases in humans.¹ It is a zoonotic infection that can be transmitted from animal-to-human and then human-to-

human.² The most recent outbreak of coronavirus disease 2019 (COVID-19) in Wuhan City, Hubei Province, China, has emerged as a global outbreak and significant public health issue.³

Coronaviruses outbreaks have been recorded previously such as Severe Acute Respiratory Syndrome-Coronavirus (SARS CoV) and Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) in 2003 and 2015, which are similar to the present novel coronavirus SARS CoV 2 (COVID-19). COVID-19 was first reported in December 2019 among patients with viral pneumonia symptoms in Wuhan City, Hubei Province; China.^{2,4} Due to the rapid spread of the virus from the source to many other countries of the world, the World Health Organization (WHO) declared it a Public Health Emergency of International Concern (PHEIC) on January 30, 2020. The first case of COVID-19 in Nigeria was recorded on 27 February 2020, and as of the 29th of September 2020, there were about 58,647 confirmed cases with 1,111 confirmed deaths. Globally there were about 33, 249, 563 cases with 1,000,040 deaths as of 29th September 2020.⁵

However, on the 11th of March 2020 the WHO declared COVID-19 a global pandemic due to its fast spread, increase in the number of countries affected, the severity of illness, and the continuous escalation in the number of cases and causalities.⁶

Coronavirus spreads mainly from person to person through close contact with infected person through respiratory droplets (coughs or sneezes) or by touching a surface or object with the virus on.⁷ The WHO reported that more than 80% of COVID-19 patients showed mild symptoms and recovered without any medical intervention, approximately 20% of infected cases had a severe illness such as shortness of breath, septic shock, and multi-organ failure while an estimated 2% of the cases can be fatal.⁶ The elderly, especially those with underlying chronic diseases are at an increased risk of having severe disease.

Coronavirus is most contagious during the first three days after onset of symptoms, however, spread may be possible before symptoms appear and in later stages of the disease.⁸ It can survive on surfaces for up to 72 hours.⁸ The best prevention for COVID-19 is to avoid being exposed to it. The recommended measures to achieve this include frequent hand washing,

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maintaining physical distance from others (especially from those with symptoms), covering coughs and sneezes with a tissue or inner elbow, keeping unwashed hands away from the face using face masks, isolating confirmed and suspected cases.⁹

Healthcare Workers (HCWs) are primarily involved in caring for patients with this highly contagious virus (COVID-19), and it has posed a serious occupational health risks to the HCWs owing to their frequent exposure to infected individuals in the course of their duty.¹⁰ Protection of HCWs and prevention of intra-hospital transmission of infection are important aspects in epidemic response, and this requires that HCWs must have updated knowledge regarding the source, transmission, symptoms, and preventive measures.¹¹ Literature suggests that lack of knowledge and misunderstandings among HCWs leads to delayed diagnosis, the spread of disease, and poor infection control practice.¹² Thousands of HCWs have already been infected. Knowledge, attitude, and practice survey like the present study provide a suitable format to evaluate existing programs and protocols and to identify effective strategies for behavioral change both in the hospital setting and in the society at large.¹³

II. METHODOLOGY

The study was a descriptive cross-sectional design conducted at Enugu State University of Science and Technology, Enugu, Nigeria. It is one of the tertiary health institutions in Enugu State. It is located at the heart of Enugu town.

a) Study population

All the consenting HCWs (doctors, nurses, and laboratory scientists) in the hospital were used for the study. There were about 426 HCWs (doctors, nurses, and laboratory scientists) in the hospital as at the time of data collection and, they were reached for the study.

b) Data collection

The data for the doctors and laboratory scientists were collected using an online questionnaire formulated with Google form. This was shared through the different doctors' and laboratory scientists' online platform (WhatsApp). The data for the nurses was collected using the same semi-structured self -

administered questionnaire shared through the head nursing services to all the nurses. This was so because there was no online platform where all the nurses in the hospital belong.

The questionnaire was formulated after extensive literature review and, according to WHO recommendations on modes of transmission and prevention of COVID-19.⁷ The questionnaire had five sections. The first section was on socio-demographic characteristics of the HCWs, the second section was on knowledge, the third was on attitude, the fourth on practice, and the fifth on perceived barrier to control of COVID-19 in healthcare settings. Eleven questions were used to access the HCWs knowledge of COVID-19. A correct answer scores one while a wrong answer scores 0. The higher the score the, more knowledgeable the HCWS is. Twenty-one questions were used to assess the attitude of the HCWs. A correct answer scores one while an incorrect answer scored 0. Some of the questions were reversed to eliminate the bias of giving a single similar response in all the questions. Thirteen questions were used to access the practice score using 3 Likert-scale questions. The responses were never, sometimes, and always weighing 1, 2, and ,3 respectively.

The perceived barrier to control of COVID-19 was accessed using nine questions. A correct answer scores one while a wrong answer scores 0. The higher the score the, more the barrier to control of COVID-19 in hospital settings

c) Data analysis

All the questionnaires were examined for completeness and all the completed ones were entered into SPSS version 25. All the responses in Google form were also entered into SPSS version 25. The data were edited for errors by generating frequencies. The categorical variables were summarized using frequencies and percentages. The significance level was placed at ≤ 0.05 . The knowledge, attitude, and practice scores were categorized into good and poor. Blooms cut-off criteria¹⁴ of 80% were used to indicate good knowledge (≥ 8.8), attitude (≥ 16.8) and practice (≥ 10.4) towards COVID-19, while less than these cut-offs were categorized as poor.

III. RESULTS

Table 1: Socio-demographic characteristics of the healthcare workers

Variable	Frequency	Percentage
Age		
20-29	13	5.5
30-39	113	48.1
40-49	79	33.6
50-59	28	11.9
Above 59	2	0.9
Gender		

Male	26	11.1
Female	209	88.9
Marital status		
Single	33	14.0
Married	202	86.0
Ethnicity		
Igbo	231	98.3
Yoruba	3	1.3
Edo	1	0.4
Religion		
Christianity	231	98.3
Islam	3	1.3
Traditional Religion	1	0.4
Occupation		
Doctor	31	13.2
Nurse	193	82.1
Laboratory Scientist	11	4.7
Years of service		
1-10	93	39.6
11-20	107	45.5
21-30	24	10.2
Above 30	11	4.7

Out of the 426 HCWs that were reached out for the study, only 235 responded, giving a response rate of 55.2%. Table 1 above shows the socio-demographic characteristics of the studied HCWs. Most of the HCWs were within the 30-39 years age group (48.1%) and have

worked for 11-20 years (45.5%). Majority were females (88.9%), married (86.0%) and nurses (82.1%). Almost all were of the Igbo ethnic group (98.3%) and Christians (98.3%).

Table 2: Knowledge of COVID-19 among healthcare workers

Variable	Yes	
	Frequency	Percentage
Have heard of COVID-19	235	100
Sources of information*		
Government	191	81.3
Internet	213	90.6
Mass media	219	93.2
Family/friends	178	75.7
Social media	200	85.1
Colleagues	202	86.0
Hospital management	170	72.3
Church	3	1.3
COVID-19 is a viral infection	213	90.6
Its incubation period is 14days	212	90.2
COVID-19 can be spread by*		
Droplets from infected persons	234	99.6
Surfaces touched by infected persons	221	94.0
Touching banknotes	167	71.1
Asymptomatic persons	201	85.5
Shaking of hands	220	93.6
Hugging	176	74.9
Staying together in a crowded room	224	95.3
Goods imported from China	65	27.7
Common symptoms of COVID-19 includes*		
Fever	234	99.4
Dry cough	229	97.4
Body aches	177	75.3
Loss of taste	53	22.6
Difficulty in breathing	230	97.9

Vomiting	110	46.8
Sneezing	203	86.4
Diarrhoea	130	55.3
Vaccine for COVID-19 is available	7	3.0
Effective treatment for COVID-19 is available	55	23.4
People with co-morbidities like hypertension/DM are more at risk	205	87.2
Children have no risk of death from COVID-19	33	14.0
COVID-19 may be more dangerous for the elderly	226	96.2
COVID-19 spreads through close contact	219	93.2
All COVID-19 patients develop severe acute respiratory illness	181	77.0
Influenza vaccine also gives protection against COVID-19	20	8.5
COVID-19 can be prevented by*		
Proper and regular hand washing with soap	235	100
Use of hand sanitizers	229	97.4
Social distancing	231	98.3
Wearing face mask	231	98.3
Eating garlic, ginger and local herbs	93	39.6
Avoid touching of the eyes, nose and mouth	228	97.0
Good cough etiquette	225	95.7
Drinking/inhaling hot water	114	48.5
Drinking alcohol	16	6.8
Taking chloroquin tablets	62	26.4
Taking antibiotics	60	25.5
Knowledge categorized		
Poor	96	40.9
Good	139	59.1

*multiple answers allowed

Table 2 above shows the knowledge of the HCWs towards COVID-19. All the HCWs have heard about COVID-19, and their major source of information was mass media (93.2%) and the internet (90.6%). About 90.2% of the HCWs knew the incubation period of the virus and, the majority also knew the modes of spread. However, about 27.7% believe that the virus can be spread by goods imported from China. The majority knew the common symptoms, but only 22.6% knew that loss of taste could be a symptom of COVID-19. About 77.0% asserted that all COVID-19 patients develop a

severe acute respiratory illness. On the knowledge of the preventive measures, all the HCWs knew that proper and regular hand washing with soap could prevent COVID-19. The majority also knew the other preventive measures like the use of hand sanitizers, social distancing, wearing of face mask, and good cough etiquette. However, 39.6% believe that eating garlic, ginger, and other local herbs can prevent COVID-19.

On the categorization of knowledge scores, only 59.1% of the HCWs had good knowledge of COVID-19.

Table 3: Attitude of the healthcare workers towards COVID-19

Variable	Yes	
	Frequency	Percentage
You think you can contact COVID-19	82	34.9
Worried that a family member may contact COVID-19	133	56.6
COVID-19 infection is associated with stigma	195	83.0
Media coverage is exaggerated	93	39.6
The virus was initially designed as a biological weapon	119	50.6
It is a plague caused by sin and unbelief	44	18.7
Designed to control population	47	20.0
Designed by pharmaceutical companies to sell drugs	21	8.9
COVID-19 can be successfully controlled	179	76.2
Self-protection is necessary for the protection of others	225	95.7
Lockdown is an effective control measure	183	77.9
Nigeria can win the battle against COVID-19	190	80.9
If I contact a person infected with COVID-19 I will inform NCDC	216	91.9
If I have symptoms of COVID-19 I will inform NCDC	208	88.5
If I have contact with an infected person I agree to be isolated at home	210	89.4

If I have contact with an infected person I agree to be isolated at an isolation centre	177	75.3
If vaccine for COVID-19 is available, I will be willing to take it	144	61.3
I follow updates on COVID-19 in my country	212	90.2
I follow updates about COVID-19 worldwide	196	83.4
Willing to attend any lecture about COVID-19 around me	212	90.2
COVID-19 can be controlled by following standard precautions for infection control	226	96.2
Attitude categorized		
Poor	133	56.6
Good	102	43.4

Table 3 above shows the attitude of the HCWs towards COVID-19. Only a minority of the HCWs think they can contact COVID-19 (34.9%), while about half (56.6%) were worried that a family member could contact it. The majority agree that self-protection is necessary for protecting others (95.7%) and that lockdown is an effective control measure (77.9%). Only

about 61.3% of the HCWs are willing to take a vaccine for COVID-19. Almost all of the respondents (96.2%) agree that COVID-19 can be controlled by following standard precautions for infection control. Only 43.4% of the HCWs had a good attitude toward COVID-19 on categorization.

Table 4: Healthcare workers practice towards COVID-19

Variable	Yes	
	Frequency	Percentage
I have been to crowded places in recent time	139	59.1
Have cancelled attending events due to COVID-19	174	74.0
Wear face mask always while leaving home	227	96.6
Wear mask in correct way	231	98.3
Dispose mask when it becomes moist or after 8 hours	194	82.6
Follow WHO hand washing technique	218	92.8
Practice social distancing	220	93.6
Follow lockdown regulations	208	88.5
Cover mouth with tissue while sneezing/coughing	199	84.7
Dispose used tissue in covered trash	215	91.5
Avoid touching eyes, mouth and nose as much as possible	204	86.8
I educate my patients about COVID-19	226	96.2
I follow standard precautions for infection control always	224	95.3
Practice categorized		
Poor	16	6.8
Good	219	93.2

Table 4 shows the HCWs practice towards COVID-19. The practice scores of the HCWs were high, as 93.2% of them had good practice towards COVID-19. The majority of them follow the WHO hand washing

technique (92.8%), follow lockdown regulations (88.5%), and follow standard precautions for infection control always (95.3%).

Table 5: Perceived barriers to effective control of COVID-19 in hospital settings

Variable	Yes	
	Frequency	Percentage
Lack of knowledge about mode of transmission of COVID-19	141	60.0
Unavailability of infection control supplies*		
Gloves	179	76.2
Face mask	182	77.4
Face shield	207	88.1
Splash proof apron	214	91.1
Goggles	211	89.8
Carelessness on the part of the healthcare workers	138	58.7
Insufficient training on infection control	190	80.9
Lack of policies on infection control	175	74.5
Less commitment of healthcare workers to policies	139	59.1

Overcrowding in the emergency rooms	206	87.7
Overcrowding in clinics and wards	207	88.1
Not washing hands before and after contact with patients	174	74.0

*multiple answers allowed

Table 5 shows the perceived barrier to control of COVID-19 in a hospital settings. The major perceived barrier to effective control of COVID-19 in the hospital setting was the unavailability of PPEs like splash proof aprons (91.1%) and goggles (89.8%) followed by overcrowding in emergency rooms (87.7%), clinics, and wards (88.1%). Others were insufficient training on infection control (80.9%) and a lack of policies on infection control (74.5%).

IV. DISCUSSION

COVID-19 is a global health problem that is affecting every aspect of human life. HCWs being at the forefront of the fight against the infection, are faced with a high likelihood of being infected with the infection than the general population.^{15, 16}

This is one of the reasons why the WHO have recommended the adoption and use of proper prevention and control measures for HCWs. This includes the use of proper Personal Protective Equipment (PPE), such as face masks, splash-proof gowns, gloves, eye goggles, and FFP2 respirator masks in aerosol-generating procedures.¹⁷

In this study, about 59.1% of the HCWs had good knowledge of COVID-19 including its incubation period, mode of transmission, common symptoms, and preventive measures. This knowledge score was not optimal as knowledge helps to form one's attitude, promote productive behaviors and affect their coping mechanisms towards specific events.¹⁸ The score was, however, similar to the report of a similar study in Uganda where 69% of the HCWs had good knowledge of COVID-19¹⁹ but lower than the report of other studies in China.^{20, 21} Better knowledge among these HCWs may be due to better training on COVID-19.

Further education, training, and retraining of HCWs through continuous professional education, particularly on the common symptoms, modes of transmission, and prevention will help in improving the knowledge of the HCW about COVID-19. The commonest source of information on COVID-19 was the mass media like television, radio, newspapers (93.2%), followed by the internet (90.6%). This indicates that such media should be used to disseminate information about COVID-19 to reach the majority of the HCWs.

The delivery of rapid, reliable information that addresses critical infection control measures was of key importance, e.g., poor hospital infection prevention and control measures, inadequate training in infection control processes, poor compliance with the use of personal protection equipment (PPE), exposure to high-risk procedures such as tracheal intubation and

exposure to unsuspected SARS patients are known to be associated with a high risk of transmission of viral infections to healthcare workers.^{22, 23} The aim of information dissemination is to transfer knowledge of international best practices to the front-liners who need it most, at a rate equal to or faster than the increasing epidemic. The use of social media have shown to be a faster means as concurred by another literature.²⁴

However, there has been worries about misinformation regarding COVID-19 on the internet, which can misguide HCWs because the internet is not without disadvantages. It is, therefore, necessary that before use, healthcare workers must critically appraise the information contained.²⁵ In particular, health authorities and scientists have warned that widespread misinformation about COVID-19 is a serious concern causing xenophobia worldwide.^{26, 27} In this regard, HCWs should carefully evaluate COVID-19-related information and should use scientific and authentic content as information sources.

The only factor that significantly affected the knowledge of COVID-19 in the present study was occupation where the nurses (64.2%) and the laboratory scientists (63.6%) were found to have better knowledge scores than the doctors (25.8%). This was surprising as doctors, by their training, were supposed to have a better knowledge of COVID-19 compared to other HCWs. However, a similar study reported that doctors had better knowledge than the other HCWs.^{21, 28}

One notable point on the HCWs knowledge of the mode of spread of COVID-19 is that about 27.7% asserted that COVID-19 could be contacted from goods imported from China. This can affect the use of aids and other products from China for the prevention of COVID-19 and have a negative impact on the general control measures. Also, 39.6% agree that eating ginger, garlic, and local herbs can prevent COVID-19 infection. This misconception can delay seeking medical advice and result in fatal outcomes for COVID-19 cases. Awareness of the mode of spread and prevention should be heightened among the HCWs as the general public also depend on the information given by the HCWs.

In the present study, only 43.4% of the HCWs had good attitude toward COVID-19. This poor attitude of HCWs towards COVID-19 was reported in a similar studies in Uganda, where only 21% of them had a good attitude toward COVID-19.¹⁹ The similarity may be because both studies were done in Africa with similar beliefs and attitudes.

About half (50.6%) of the HCWs believe that the virus was initially designed as a biological weapon. This finding was similar to the report of a Nigerian study

where 46.9% of the respondents had a similar view.²⁹ About 56.6% are worried that their family member may contact COVID-19. This was lower than the report of a similar study where 79.8% of the HCWs are worried that their family member may contact COVID-19.²⁰

However, there was a good attitude towards some of the individual elements of attitude. About 95.7% believe that self-protection is necessary for the protection of others, 90.2% follow update about COVID-19 in Nigeria, 90.2% are willing to attend lectures on COVID-19 if organized around them, and 96.2% believe that COVID-19 can be controlled by following standard precautions for infection control. A similar study in Egypt reported a similar finding where 95.6% of the studied HCWs asserted that following standard precautions can prevent infection transmission.³⁰

The majority of the HCWs (93.2%) in the present study had good preventive practices towards COVID-19. They reported to follow standard precautions for infection control and follow the WHO hand washing technique. Good knowledge and practice of standard precautions including good cough etiquette, have been shown to reduce infection transmission in hospitals.³¹ The finding in this study was, however, higher than what was reported in another study in Uganda.¹⁹

The commonest perceived barriers to effective infection control were overcrowding in the clinics, wards, and emergency rooms; thus, the HCWs were not able to maintain a safe distance from their patients. This will lead to an increase in infection transmission. An Egyptian study reported that crowdedness and poor ventilation were factors that make HCWs more susceptible to infection than the general population.³⁰ An Iranian study reported that physicians (67%), nurses (24%), and operating room staff (100%) did not keep a one-meter distance from patients due to lack of space.³² Other barriers were the unavailability of infection control supplies, especially the Personal Protective Equipment's (PPEs). This was reported in similar studies in Iran³² and China³³ where lack of these PPEs was reported to be one of the reasons for infection of HCWs with COVID-19. A Nigerian study conducted in primary and tertiary health facilities showed that there is poor availability of infection control supplies in the studied facilities.³⁴ This strengthens the finding in the present study.

Insufficient training on infection control and lack of knowledge on the mode of transmission of COVID-19 were also reported barriers to its control. This was not surprising as COVID-19 is a novel virus that was not well understood at the onset of the pandemic. It calls for training and retraining of HCWs on such novel diseases once they come up to reduce its transmission in hospital settings. This lack of knowledge by the HCWs has been reported in other studies as a significant factor in the transmission of infection in hospitals.³⁵

a) Limitations

The data presented in our study were self-reported and partially dependent on the participants' integrity and recall ability; thus, they may be subject to recall bias. However, in despite of this limitation, our findings present valuable information on the knowledge, attitudes, and practice of HCWs during a peak period of COVID-19.

V. CONCLUSION

The advancing global threat of COVID-19 indicates that greater efforts through educational campaigns that target HCWs and the wider population are highly needed. This can be done using more effective social media.

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Authors' contributions: NHO designed the study, developed the questionnaire, collected the data, analysed the data, and prepared the manuscript. MOA also collected data, conducted the pre-test, conducted the literature review. EUE contributed to literature review and filtered the data. All the authors read and approved the final manuscript.

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Infecciones de Piel Y Partes Blandas en Pacientes Internados en el Servicio De Clínica Médica del Hospital General Dde Luque en los Meses de Marzo 2017 a Agosto 2017

By María Jessica Jarolin

Universidad Católica

Abstract- Introduction: Currently, the skin and soft tissues infection are an important cause of consultation and even admission wide world. They have different presentations, etiology and severity. Therefore, it is a challenge to recognize the immediate needs for care and intervention, either medical or surgical, from less severe threats.

Objective: To identify the most frequent skin and soft tissue infections in patients admitted to the Clinical Medical Service of General Hospital of Luque in the months of March 2017 to August 2017.

Methods: An investigation descriptive, prospective, and cross-sectional was realized with non experimental design. 77 patients included themselves who were admitted in the Department of Internal Medicine of the Hospital General de Luque, during the months of March 2017 to August 2017 with infections of skin and soft tissues.

Keywords: *infection of skin, soft tissues, cellulitis, diabetic foot.*

GJMR-F Classification: NLMC Code: W 84.7



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Infecciones de Piel Y Partes Blandas en Pacientes Internados en el Servicio De Clínica Médica del Hospital General Dde Luque en los Meses de Marzo 2017 a Agosto 2017

Skin and Soft Tissues Infection in Patients Admitted in Internal Medicine Service of Hospital General de Luque from March 2017 to August 2017

María Jessica Jarolin

Resumen - Introducción: Actualmente, las infecciones de piel y partes blandas constituyen una causa importante de consulta y hospitalización a nivel mundial. Tienen diferentes presentaciones, etiología y severidad, por lo que es un desafío diferenciar aquellas que requieren inmediata atención e intervención, médica o quirúrgica, de aquellas menos severas.

Objetivo: Identificar las infecciones de piel y partes blandas más frecuentes en los pacientes internados en el servicio de Clínica Médica del Hospital General de Luque en los meses de Marzo 2017 a Agosto 2017.

Metodología: Se realizó una investigación descriptiva, prospectiva, y transversal con diseño no experimental. Se incluyeron 77 pacientes que estuvieron internados en el servicio de Clínica Médica del Hospital General de Luque, durante los meses de Marzo 2017 a Agosto 2017, con infecciones de piel y partes blandas.

Resultados: La mayoría de los pacientes incluidos en el estudio son varones, mayores de 50 años. La comorbilidad más frecuente fue la combinación de hipertensión arterial más diabetes mellitus. Las infecciones tuvieron una puerta de entrada conocida en la mayor parte de los casos. El hisopado nasal para staphylococcus aureus fue positivo en solo 2 pacientes. El 40% se realizó hemocultivo (2 muestras), tan solo 2 fueron positivos. De los 29 cultivos de secreción que se tomaron, 9 fueron negativos, 7 tuvieron gérmenes polimicrobianos. En los cultivos polimicrobianos se aisló Enterobacter cloacae, Staphylococcus aureus meticilino resistente, Streptococcus pyogenes, Klebsiella pneumoniae, Proteus penneri, Morganella morganii, Serratia marcescens. La principal localización de las infecciones fue en miembros inferiores. Un 56% de los pacientes recibió algún tipo de antibiótico previo al ingreso al servicio. Las complicaciones locales más frecuentes fueron las amputaciones en un 22%; abscesos en un 13%, entre otras. El 53% no presentó complicaciones locales. En cuanto a las complicaciones sistémicas, el 86% no presentó ninguna. El 10% de los pacientes llegaron a sepsis y el 4% hizo shock séptico. Las patologías más frecuentes son pie diabético infectado y celulitis en miembro inferior. El tiempo de estancia hospitalaria

de los pacientes fue de 3 a 14 días en su mayoría. **Conclusión:** Las infecciones de piel y partes blandas más frecuentes son el pie diabético infectado (35%) y la celulitis localizada en miembros inferiores (33%). La comorbilidad más frecuente fue la combinación de hipertensión arterial más diabetes mellitus (32%). Las complicaciones locales más frecuentes fueron las amputaciones en un 22% y abscesos en un 13%. La mayoría de los cultivos en los cuales se aislaron gérmenes monobacterianos fueron Staphylococcus aureus meticilino resistente; entre los cultivos polimicrobianos se encuentran principalmente Enterobacter cloacae, Staphylococcus aureus meticilino resistente y Klebsiella pneumoniae. El tiempo de estancia hospitalaria de los pacientes fue mayormente de 3 a 14 días.

Palabras clave: infección de piel, partes blandas, celulitis, pie diabético.

Abstract- Introduction: Currently, the skin and soft tissues infection are an important cause of consultation and even admission wide world. They have different presentations, etiology and severity. Therefore, it is a challenge to recognize the immediate needs for care and intervention, either medical or surgical, from less severe threats.

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Results: The majority of patients included in the study are men, older than 50 years. The most common co morbidity was the combination of arterial hypertension and diabetes mellitus. Infections had a known gateway in most cases. Nasal swab for staphylococcus aureus was positive in only 2 patients. Blood culture was performed in 40% (2 samples), only 2 were positive. Of the 29 cultures of secretion that were taken, 9 were negative, 7 had polymicrobial germs. Enterobacter cloacae, methicillin-resistant Staphylococcus aureus, Streptococcus pyogenes, Klebsiella pneumoniae, Proteus penneri, Morganella

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morganii, *Serratia marcescens*, were isolated from polymicrobial cultures. The main site of infections was in lower limbs. 56% of patients received some type of antibiotic prior to admission to the service. The most frequent local complications were amputations in 22%; abscesses in 13%, among others. 53% had no local complications. As for the systemic complications, 86% did not present any. 10% of the patients had sepsis and 4% had septic shock. The most common pathologies are infected diabetic foot and lower limb cellulitis. The patient's hospital stay lasted from 3 to 14 days mostly. Conclusions: The most frequent skin and soft tissue infections are infected diabetic foot (35%) and cellulitis located in lower limbs (33%). The most common comorbidity was the combination of arterial hypertension plus diabetes mellitus (32%). The most common local complications were amputations in 22% and abscesses in 13%. Most of the cultures in which monomicrobial germs were isolated were methicillin resistant *Staphylococcus aureus*; among polymicrobial cultures are mainly *Enterobacter cloacae*, methicillin-resistant *Staphylococcus aureus* and *Klebsiella pneumoniae*. The patient's hospital stay was mostly from 3 to 14 days.

Keywords: *infection of skin, soft tissues, cellulitis, diabetic foot.*

I. INTRODUCCIÓN

Actualmente, las infecciones de piel y partes blandas constituyen una causa importante de consulta e incluso hospitalización a nivel mundial (1). Tienen diferentes presentaciones, etiología y severidad. Es por tanto un desafío diferenciar aquellas que requieren inmediata atención e intervención, ya sea médica o quirúrgica, de aquellas menos severas. Aproximadamente un 7 a 10% de los pacientes hospitalizados son debido a estas infecciones (2).

La infección primaria de la piel se inicia por ruptura de la epidermis, generalmente es provocada por *Streptococcus pyogenes* y *Staphylococcus aureus* (3). Los factores asociados al huésped que predisponen la infección en la piel son inmunosupresión, vasculopatía, neuropatía y disminución del drenaje linfático (4).

El principal objetivo de este trabajo es identificar las infecciones de piel y partes blandas más frecuentes en los pacientes internados en el servicio de Clínica Médica del Hospital General de Luque, las comorbilidades pre existentes en estos pacientes y las complicaciones más frecuentes, a fin de que, en el futuro, podamos implementar programas de prevención primaria.

II. MATERIAL Y MÉTODOS

a) Diseño Metodológico

Se realizará un estudio prospectivo, descriptivo, observacional, de casos consecutivos, de pacientes internados en el servicio de Clínica Médica del Hospital General de Luque con diagnóstico de infección de piel y partes blandas adquiridas en la comunidad, durante los meses de Marzo 2017 a Agosto 2017.

b) Población de estudio

La población enfocada son pacientes mayores de dieciséis años, internados en el Servicio de Clínica Médica durante los meses de Marzo 2017 a Agosto 2017, debido a infección de piel y partes blandas.

La población accesible son todos los pacientes que cumplieron con los criterios de inclusión y accedieron a participar del estudio.

Serán incluidos en el estudio adultos a partir de los dieciséis años de ambos sexos, que ingresan al servicio de Clínica Médica del Hospital General de Luque con diagnóstico de infecciones de piel y partes blandas adquiridas en la comunidad, en los meses de Marzo 2017 a Agosto 2017.

Se excluirán del estudio los pacientes que presenten infecciones adquiridas en el hospital y aquellos pacientes que se nieguen a participar en el estudio.

El tipo de muestreo es no probabilístico de casos consecutivos.

Se reclutarán los pacientes mediante un formato estandarizado realizado por el autor tipo encuesta numerada (ANEXO 1), revisión de fichas clínicas y observación.

c) Variables de estudio

En un cuestionario general diseñado al efecto se recogieron las siguientes variables: sexo, edad, comorbilidades pre existentes, localización de la lesión, puerta de entrada, complicaciones locales y sistémicas, hisopado nasal para *Staphylococcus aureus*, hemocultivos, cultivo de secreción, gérmenes aislados, tratamiento antibiótico utilizado (previo a la internación), evolución del paciente y días de internación.

d) Técnicas y Procedimientos de recolección de información

Como instrumentos de recolección de datos se utilizarán encuestas numeradas, formuladas por el autor. La recolección de la información y el análisis de los datos se realizarán en una planilla electrónica en el programa informático Microsoft Excel 2010.

e) Asuntos Éticos

Se tomarán en cuenta los aspectos éticos relacionados con el principio de la confidencialidad, ya que la información recolectada será guardada con absoluta confiabilidad, garantizando el anonimato de los pacientes en estudio, además de asegurar que terceras personas no puedan tener acceso a dicha información. Todo lo indicado anteriormente, será utilizado exclusivamente para el presente estudio, facultándose a quien crea conveniente la verificación de la información. Por otra parte, se requerirá la aplicación de un consentimiento informado escrito (ANEXO 2) por parte de cada uno de los pacientes que integran este estudio, dando así su autorización para utilizar la información personal facilitada por ellos.

III. RESULTADOS

De los 77 pacientes incluidos en el estudio, el 70% fueron hombres y el 30% fueron mujeres (*Imagen 1*).

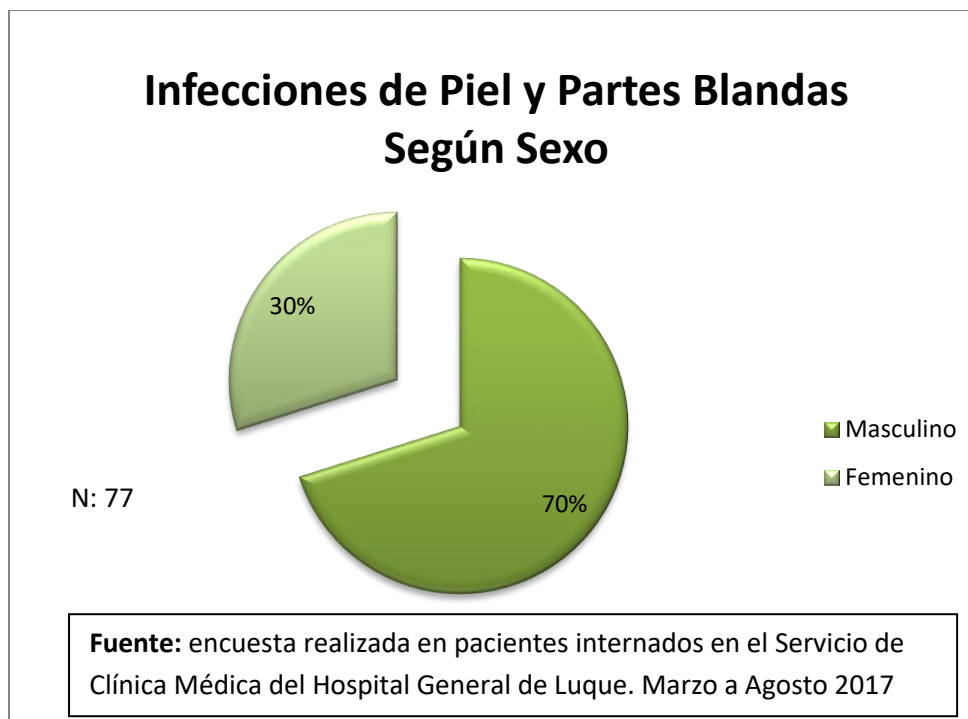


Imagen 1

El 10% de los pacientes estaba en el rango etario de 16 a 30 años, el 18% entre 31 a 50 años y el 72% tenían de 51 años en adelante (*Imagen 2*).

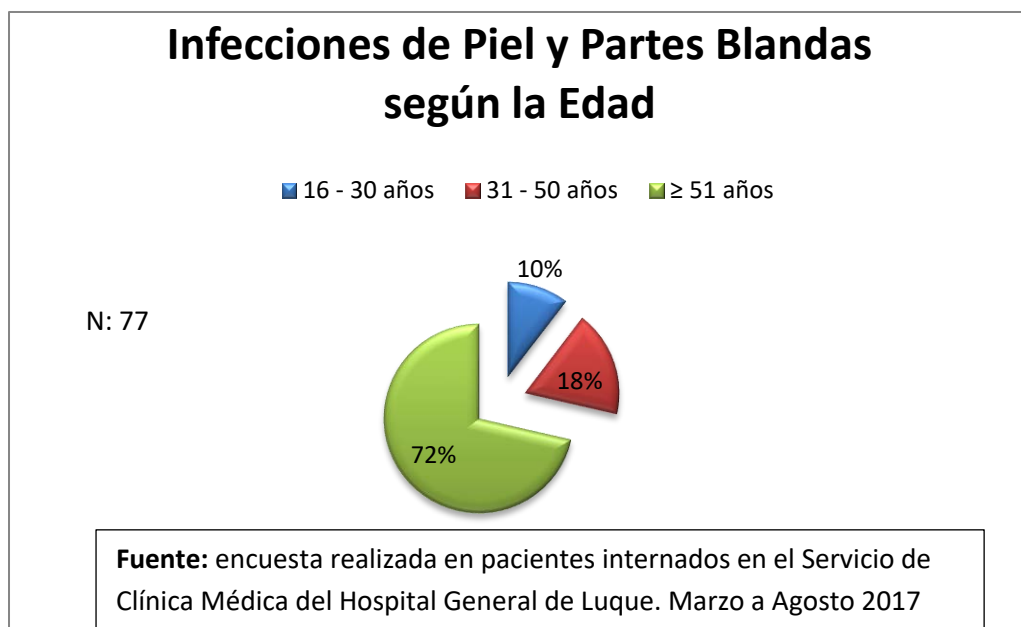
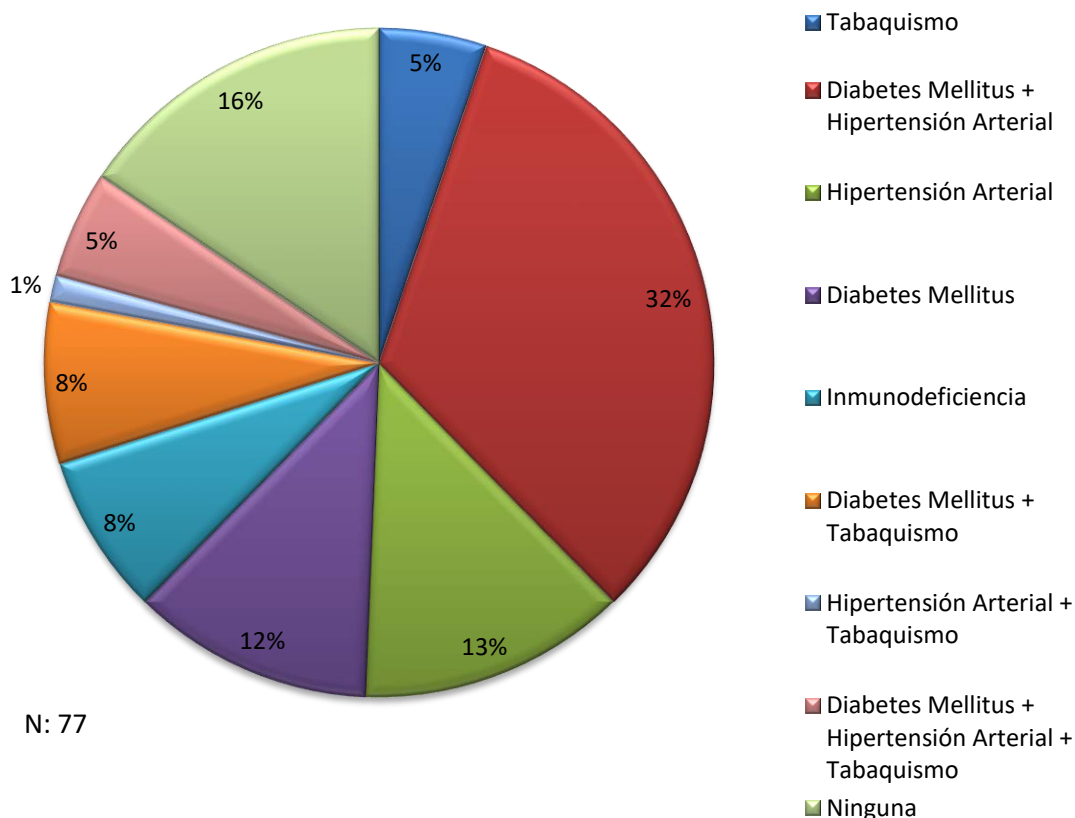


Imagen 2

Las comorbilidades que presentaron fueron muy variadas: 5% era solo tabaquista; 32% tenía diabetes mellitus e hipertensión arterial; 13% solo tenía hipertensión arterial; 12% solo tenía diabetes mellitus; 8% padecía de alguna inmunodeficiencia; 8% era

diabético y tabaquista; 1% era hipertenso y tabaquista; 5% tenía diabetes mellitus, hipertensión arterial y era tabaquista; 16% no se conocía portador de patología de base ni hábitos tóxicos (*Imagen 3*).

Comorbilidades Pre Existentes

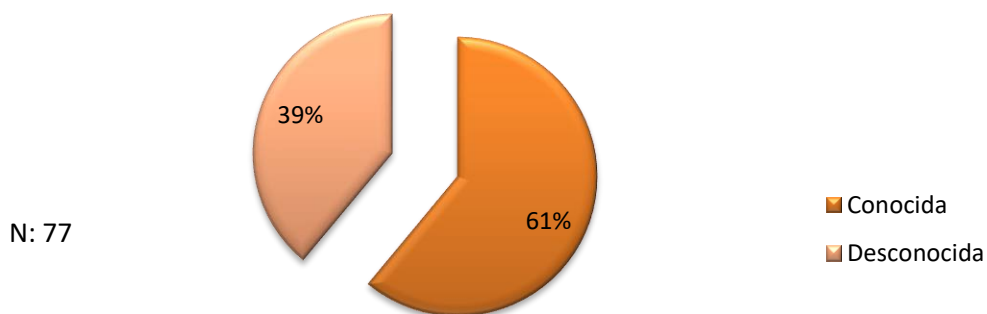


Fuente: encuesta realizada en pacientes internados en el Servicio de Clínica Médica del Hospital General de Luque. Marzo a Agosto 2017

Imagen 3

La puerta de entrada de las infecciones fueron conocidas en un 61% y desconocida en un 39% (Imagen 4).

Puerta de Entrada



Fuente: encuesta realizada en pacientes internados en el Servicio de Clínica Médica del Hospital General de Luque. Marzo a Agosto 2017

Imagen 4

Se realizó hisopado nasal para *Staphylococcus aureus* en el 25% de los pacientes, de los cuales 2 retornaron positivos y 17 resultaron negativos (Imagen 5).

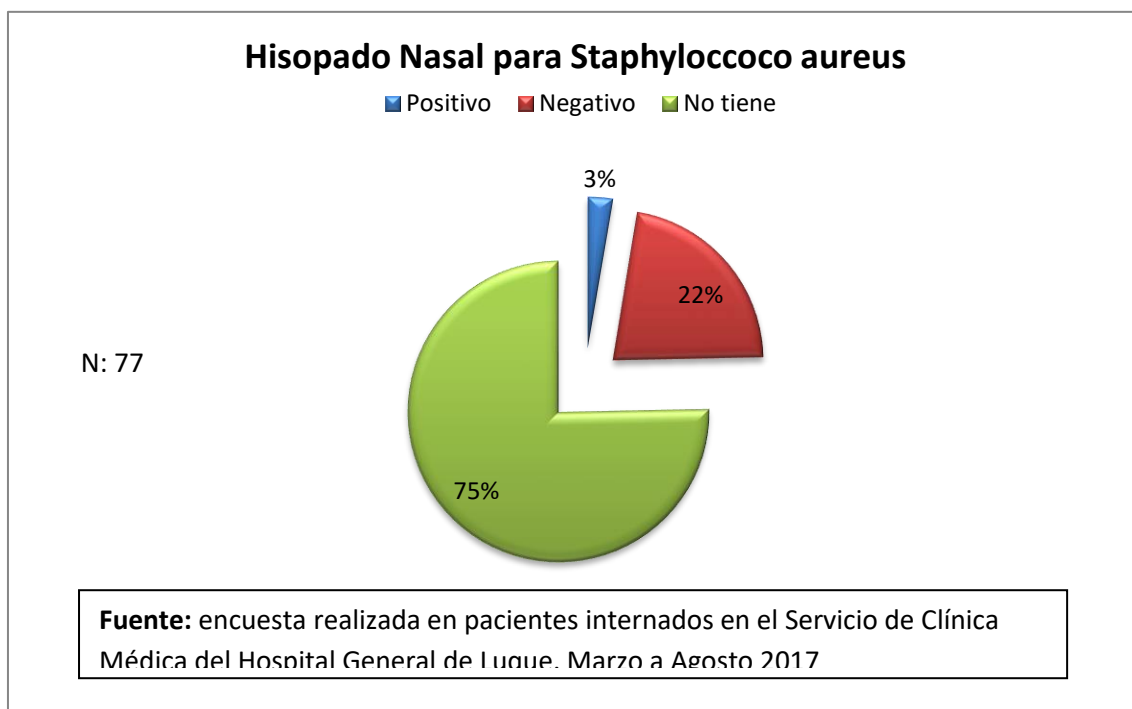


Imagen 5

Se realizó hemocultivo (2 muestras) en el 40% de los pacientes, de los cuales 2 resultaron positivos y 29 fueron negativos (Imagen 6).

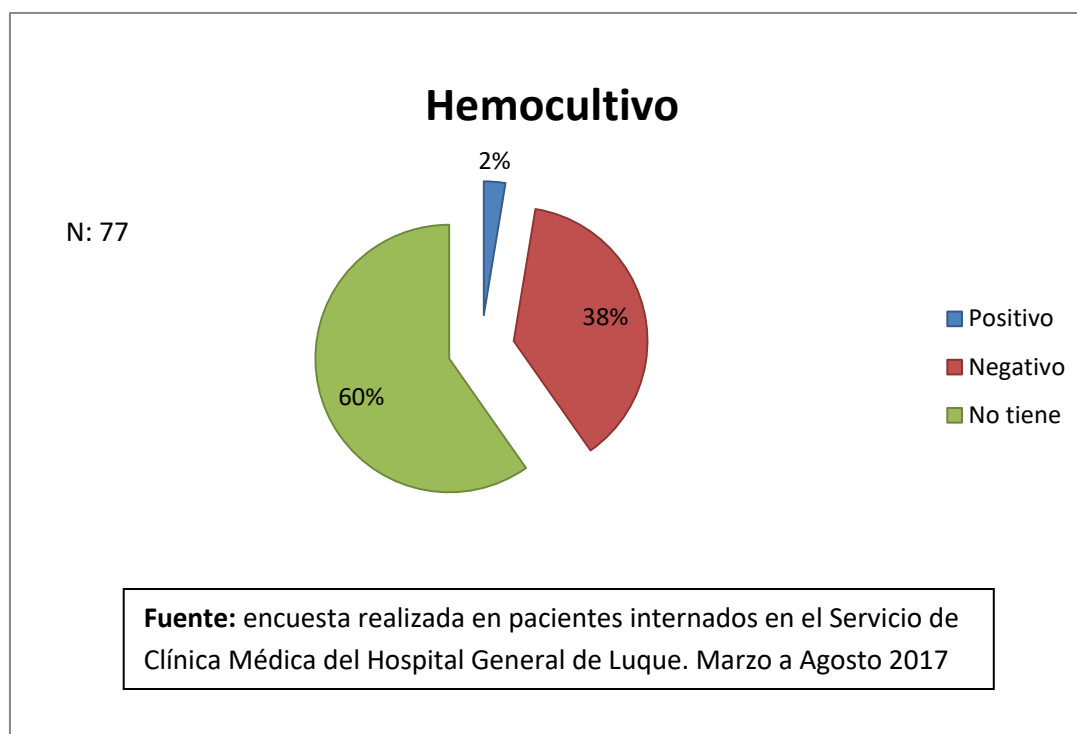


Imagen 6

Se realizó cultivo de secreción de la infección en 29 pacientes, en los cuales se aislaron los siguientes gérmenes: 1 *Acinetobacter baumannii*, 1 *Enterobacter cloacae*, 6 *Staphylococcus aureus* metilino resistente, 2

Staphylococcus aureus metilino sensible, 2 *Escherichia coli*, 1 *Proteus mirabilis*, 7 fueron polimicrobianos, 9 fueron negativos (Imagen 7).



Imagen 7

En los cultivos polimicrobianos se aislaron los siguientes gérmenes: 2 Enterobacter cloacae, 3 Staphylococcus aureus meticilino resistente, 1 Streptococcus pyogenes, 4 Klebsiella pneumoniae, 1 Proteus penneri, 1 Morganella morganii, 1 Serratia marcescens (Imagen 8).

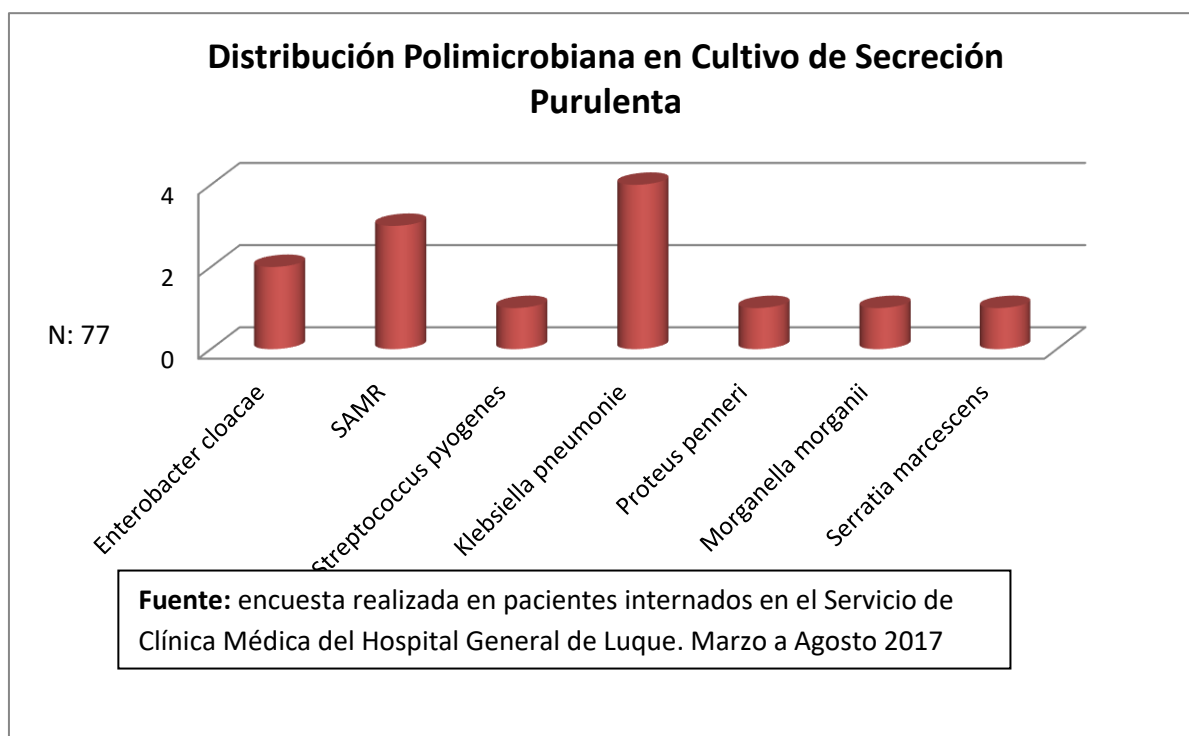


Imagen 8

Un 75% de las lesiones estuvieron localizadas en los miembros inferiores; 14% en la cabeza; 4% en tórax; 3% en abdomen y miembros superiores, respectivamente; y 1% en región sacra (Imagen 9).

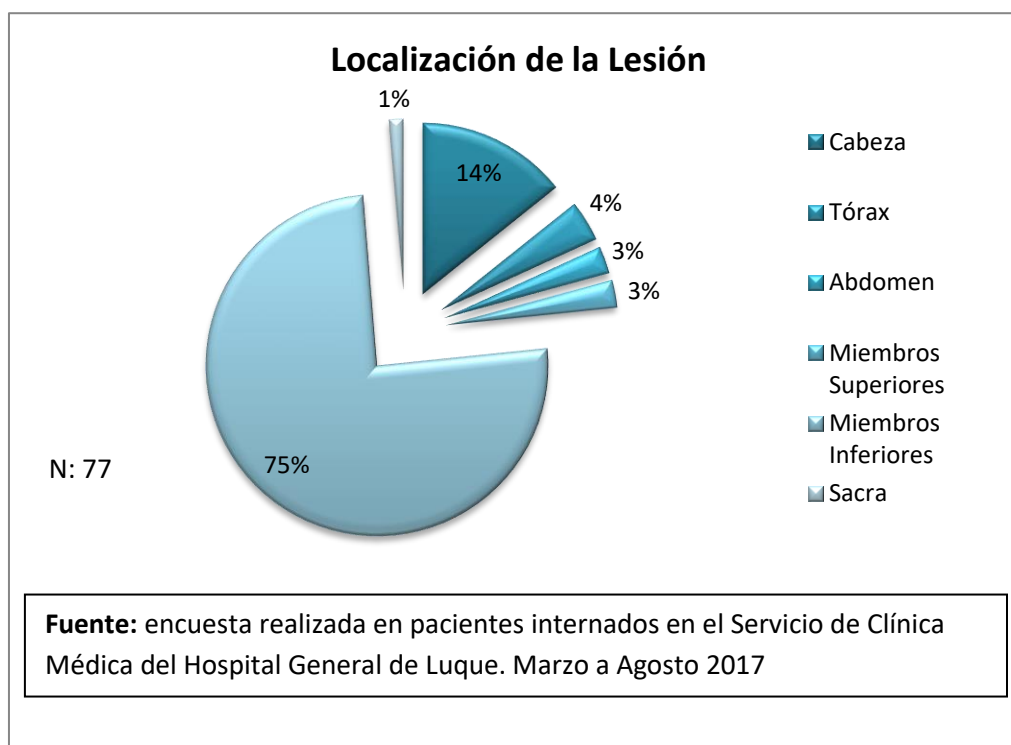


Imagen 9

Un 56% de los pacientes recibió algún tipo de antibiótico previo al ingreso al servicio, el 44% no recibió antibióticos antes de la internación (Imagen 10).

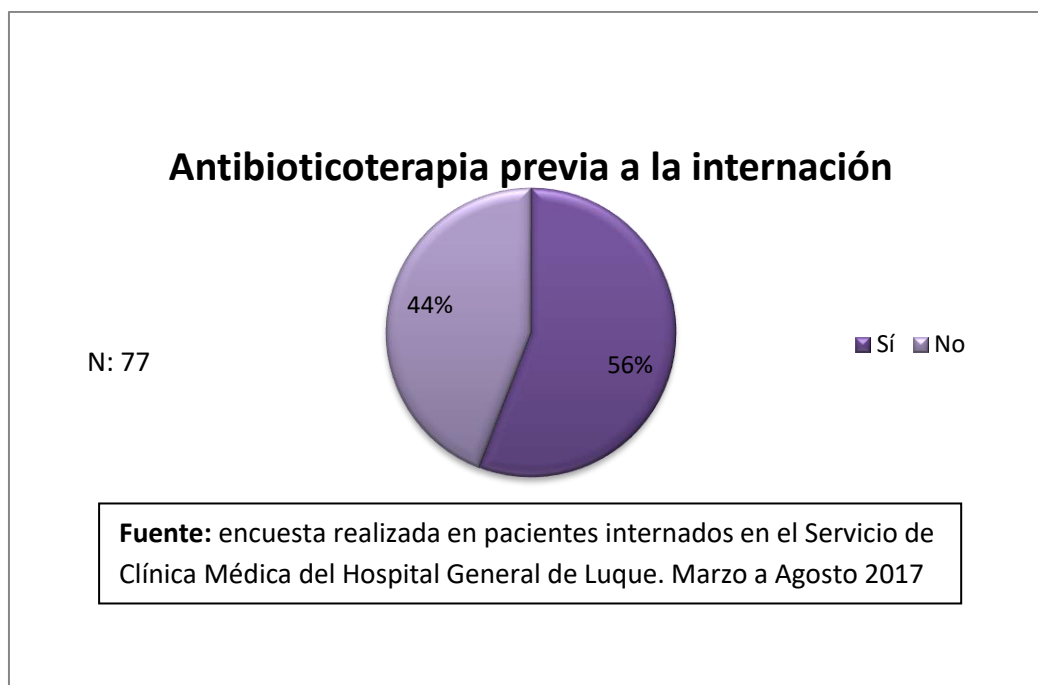


Imagen 10

Las complicaciones locales más frecuentes fueron las amputaciones en un 22%; abscesos en un 13%; miasis y fascitis necrotizante en un 4%, respectivamente; osteomielitis en un 3%; fístula carotídeo-cavernosa en un 1%. El 53% no presentó complicaciones locales (Imagen 11).

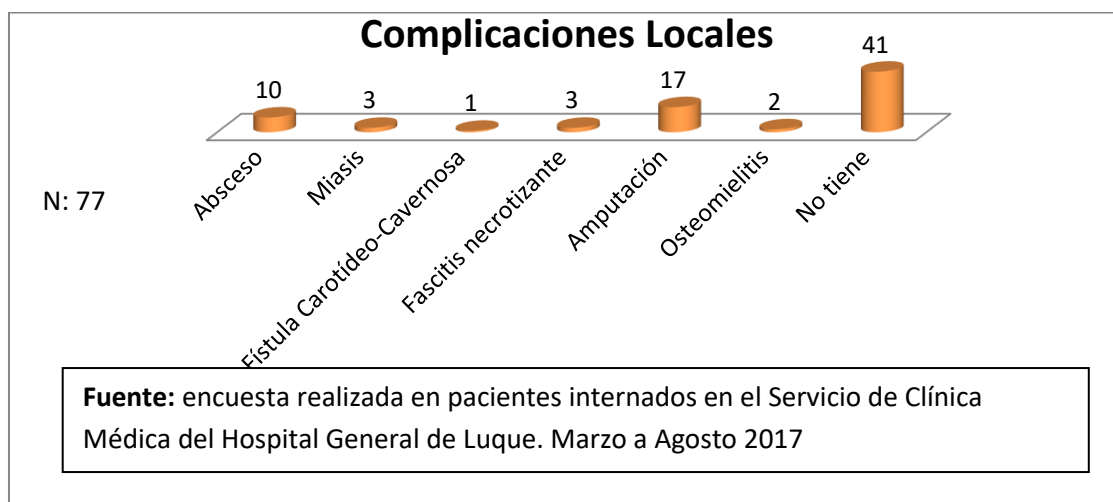


Imagen 11

En cuanto a las complicaciones sistémicas, el 86% no presentó ninguna. El 10% de los pacientes llegaron a sepsis y el 4% hizo shock séptico (Imagen 12).

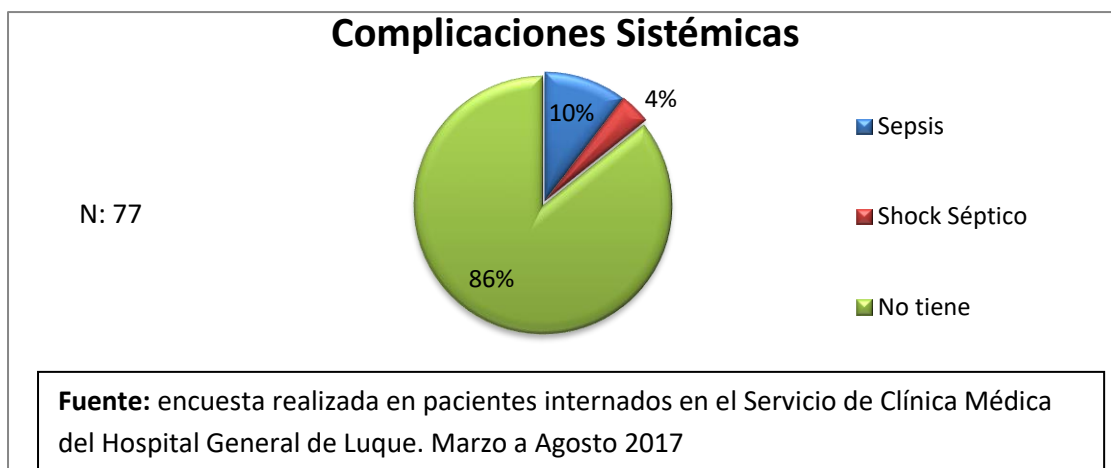


Imagen 12

El 97% de los pacientes fueron de alta mejorados, tan solo el 3% del total falleció durante la internación (Figura 13).



Figura 13

Las patologías más frecuentes son: pie diabético infectado el 35%; celulitis en miembro inferior el 33%; celulitis facial el 12%; úlcera vascular infectada el 4%; absceso en pared abdominal, celulitis en miembro superior e infección de herida operatoria el 3%

cada uno; tungiasis, absceso dental, absceso intercostal, escara sacra infectada, adenoflemón, absceso interescapular, ántrax en dorso el 1% cada uno (Figura 14).

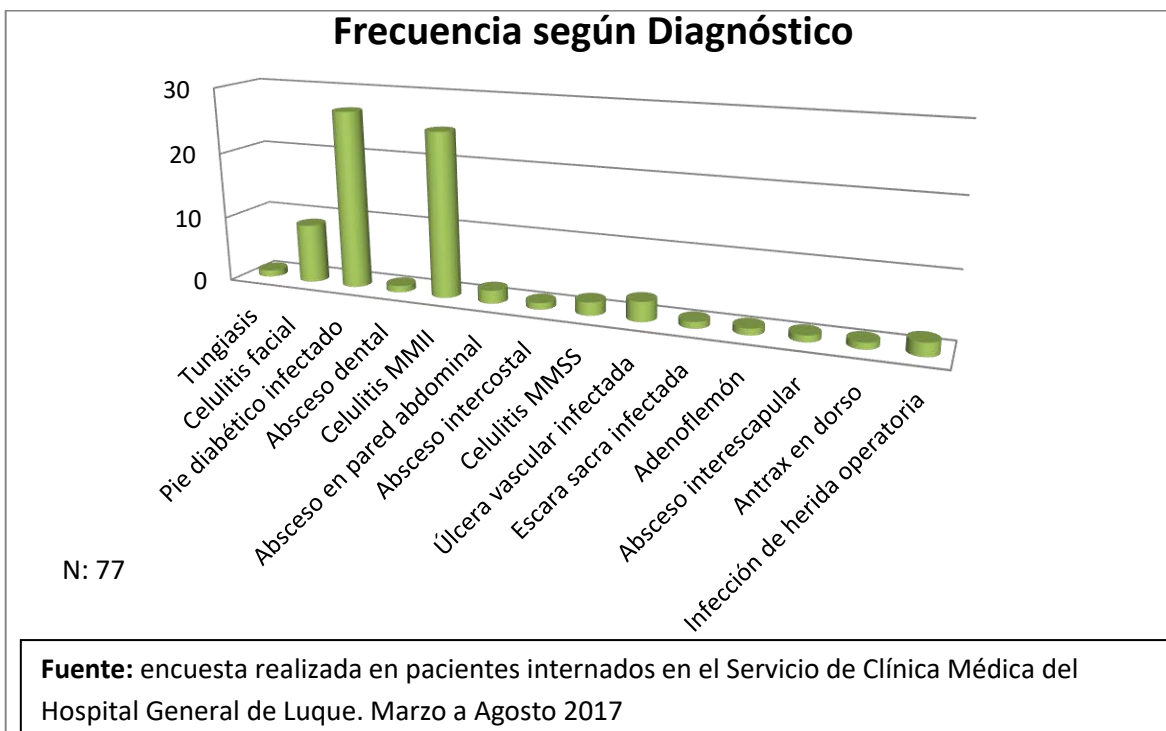


Figura 14

El tiempo de estancia hospitalaria de los pacientes fue de 3 a 14 días en un 62%; de 15 a 22 días en un 17%; y de 23 días o más en un 21% (Figure 15).

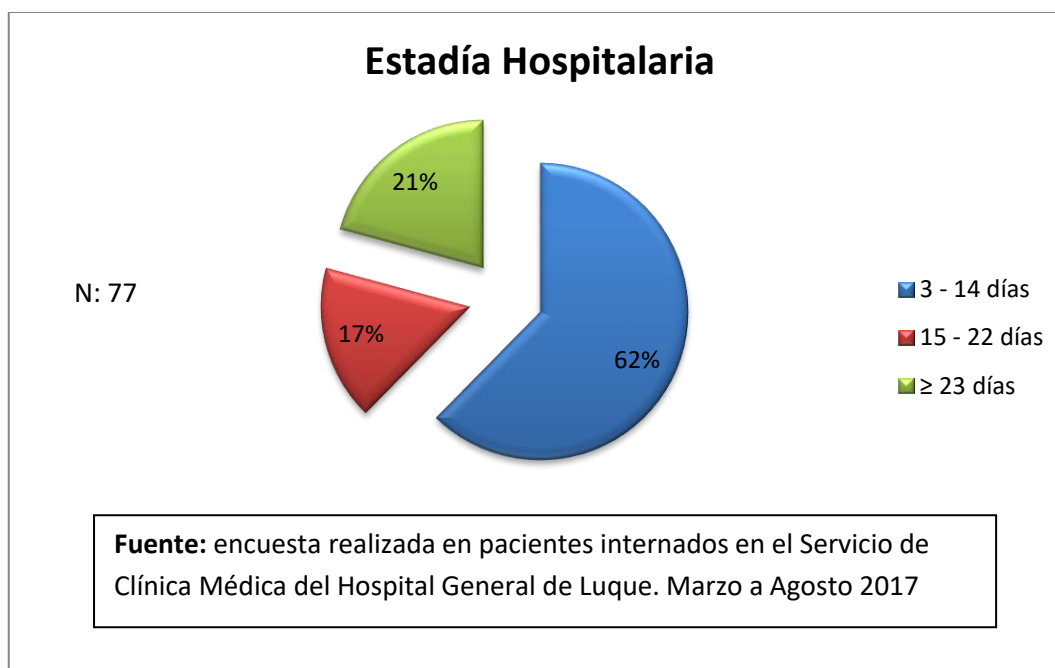


Figura 15

IV. DISCUSIÓN

La mayoría de los pacientes incluidos en el estudio son varones, mayores de 50 años, al igual que en el estudio nacional más recientemente realizado (5). La comorbilidad más frecuente fue la combinación de hipertensión arterial más diabetes mellitus, en contrapartida, los estudios nacionales hablan solo de la diabetes mellitus tipo 2 como comorbilidad más frecuente en estos pacientes (6). La mayoría de las infecciones tuvieron una puerta de entrada conocida. Se realizó hisopado nasal en un cuarto de los pacientes, tan solo dos fueron positivos. El 40% se realizó hemocultivo (2 muestras), tan solo 2 fueron positivos. De los 29 cultivos de secreción que se tomaron, 9 fueron negativos, 7 tuvieron gérmenes polimicrobianos, en 6 se aisló *Staphylococcus aureus* meticilino resistente, 2 *Staphylococcus aureus* meticilino sensible, 2 *Escherichia coli*, 1 *Proteus mirabilis*, 1 *Acinetobacter baumannii*, 1 *Enterobacter cloacae*; esto coincide con los datos a nivel mundial, en donde se observa como principal agente al *Staphylococcus aureus*, seguido por *Pseudomonas aeruginosa* y *Escherichia coli* (7). En los cultivos polimicrobianos se aislaron los siguientes gérmenes: 2 *Enterobacter cloacae*, 3 *Staphylococcus aureus* meticilino resistente, 1 *Streptococcus pyogenes*, 4 *Klebsiella pneumoniae*, 1 *Proteus penneri*, 1 *Morganella morganii*, 1 *Serratia marcescens*. Un 75% de las lesiones estuvieron localizadas en los miembros inferiores; 14% en la cabeza; 4% en tórax; 3% en abdomen y miembros superiores, respectivamente; y 1% en región sacra. Un 56% de los pacientes recibió algún tipo de antibiótico previo al ingreso al servicio, el 44% no los recibió. Las complicaciones locales más frecuentes fueron las amputaciones en un 22%; abscesos en un 13%; miasis y fascitis necrotizante en un 4%, respectivamente; osteomielitis en un 3%; fístula carotídeo-cavernosa en un 1%. El 53% no presentó complicaciones locales. En cuanto a las complicaciones sistémicas, el 86% no presentó ninguna. El 10% de los pacientes llegaron a sepsis y el 4% hizo shock séptico, a diferencia del 47% de pacientes con sepsis según los registros de otros centros nacionales (8). Las patologías más frecuentes son: pie diabético infectado el 35%; celulitis en miembro inferior el 33%; celulitis facial el 12%; úlcera vascular infectada el 4%; absceso en pared abdominal, celulitis en miembro superior e infección de herida operatoria el 3% cada uno; tungiasis, absceso dental, absceso intercostal, escara sacra infectada, adenoflemón, absceso interescapular, ántrax en dorso el 1% cada uno. El tiempo de estancia hospitalaria de los pacientes fue de 3 a 14 días en un 62%; de 15 a 22 días en un 17%; y de 23 días o más en un 21%. Actualmente no hay estudios a nivel nacional que muestren la cantidad de días de internación que requieren estos pacientes; conocer esta cifra es de suma importancia, ya que de

acuerdo a esto podría estimarse el costo que ocasiona para el Estado esta patología, que en muchos casos podría incluso evitarse con un plan de atención primaria que se enfoque principalmente a la educación de los pacientes diabéticos e hipertensos.

V. CONCLUSIONES

Las infecciones de piel y partes blandas más frecuentes son el pie diabético infectado (35%) y la celulitis localizada en miembros inferiores (33%). La comorbilidad más frecuente fue la combinación de hipertensión arterial más diabetes mellitus (32%). Las complicaciones locales más frecuentes fueron las amputaciones en un 22% y abscesos en un 13%. La mayoría de los cultivos en los cuales se aislaron gérmenes monomicrobianos fueron *Staphylococcus aureus* meticilino resistente; entre los cultivos polimicrobianos se encuentran principalmente *Enterobacter cloacae*, *Staphylococcus aureus* meticilino resistente y *Klebsiella pneumoniae*. El tiempo de estancia hospitalaria de los pacientes fue mayormente de 3 a 14 días.

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ANEXOS Y APENDICES

Anexo 1:

Formulario De Recolección De Datos Servicio De Clínica Médica - Hospital General De Luque

Tema:

Infecciones de piel y partes blandas en pacientes internados en el servicio de Clínica Médica del Hospital General de Luque, de Marzo 2017 a Agosto 2017

Nombre del paciente: Edad:

Numero de ficha: Procedencia:

Diagnóstico:

- Sexo: ☐ Hombre ☐ Mujer
- Diabetes ☐ Sí ☐ No Tratamiento ☐ Sí ☐ No
- Hipertensión ☐ Sí ☐ No Tratamiento ☐ Sí ☐ No
- Tabaquista ☐ Sí ☐ No
- Inmunosupresión ☐ Sí ☐ No
- Puerta de entrada ☐ conocida ☐ desconocida
- Hisopado nasal para SARM ☐ positivo ☐ negativo ☐ no tiene
- Hemocultivos ☐ positivo ☐ negativo ☐ no tiene

Germen aislado:

- Cultivo de secreción ☐ positivo ☐ negativo ☐ no tiene

Germen aislado:

- Localización de la lesión

Miembros superiores ☐ Miembros inferiores ☐ Cabeza ☐

Abdomen ☐ Tronco ☐ Cuello ☐

- Antibióticos previos a la internación ☐ Sí ☐ No

- Infecciones superficiales ☐

Celulitis Erisipela Impétigo

Absceso Forunculosis

- Días de internación ≤ 7 ☐ 8-14 ☐ 15-22 ☐ ≥ 23 ☐

- Complicaciones locales

Absceso ☐ Sx Compartimental ☐ Fascitis ☐

- Complicaciones sistémicas

Sepsis ☐ Shock Séptico ☐

- Evolución

Mejorado ☐ Fallecido ☐

Anexo 2:

Consentimiento Informado Escrito Servicio De Clínica Médica - Hospital General De Luque

Tema: Infecciones de piel y partes blandas en pacientes internados en el servicio de Clínica Médica del Hospital General de Luque, de Marzo 2017 a Agosto 2017

He sido invitado a participar en la investigación de las infecciones de piel y partes blandas en los pacientes internados en el servicio de Clínica Médica del Hospital General de Luque.

Entiendo que debo dar información acerca de mi enfermedad, tales como mi edad, enfermedades que padezco, el uso de medicamentos antibióticos previos a la internación; también se me realizarán análisis de sangre para estudios que sean pertinentes. He sido informado de que no existen riesgos para mi salud, ya que solo se analizará la evolución de la enfermedad al recibir el tratamiento estandarizado. Sé que puede que no haya beneficios para mi persona y que no se me recompensará de forma alguna. Se me ha proporcionado el nombre de un investigador que puede ser fácilmente contactado usando el nombre y la dirección que se me ha dado de esa persona. He leído la información proporcionada o me ha sido leída. He tenido la oportunidad de preguntar sobre ella y se me ha contestado satisfactoriamente las preguntas que he realizado.

Consiento voluntariamente participar en esta investigación como participante y entiendo que tengo el derecho de retirarme de la investigación en cualquier momento sin que me afecte en ninguna manera mi cuidado médico.

Nombre del Participante _____

Firma del Participante _____

Fecha _____

Día/mes/año

Anexo 3: Autorización del Jefe de Servicio

Luque, 27 de Febrero de 2017

El que suscribe, Dr. Iván Calderoli, Jefe del Servicio de Clínica Médica del Hospital General de Luque, concede su visto bueno para la realización, en el servicio a su cargo, del protocolo de investigación clínica titulado: "INFECCIONES DE PIEL Y PARTES BLANDAS EN PACIENTES INTERNADOS EN EL SERVICIO DE CLÍNICA MÉDICA DEL HOSPITAL GENERAL DE LUQUE EN LOS MESES DE MARZO 2017 A AGOSTO 2017", cumpliendo con las actividades descriptas en el protocolo de estudio y cuyo investigador es la Dra. María Jessica Jarolin.

.....
Dr. Iván Calderoli
Jefe del Servicio de Clínica Médica
Hospital General de Luque
Vo. Bo

Anexo 4: Aceptación del tutor temático

Luque, 27 de Febrero de 2017

El abajo firmante, deja constancia por este medio que tiene conocimiento a profundidad del contenido del protocolo de investigación titulado: "INFECCIONES DE PIEL Y PARTES BLANDAS EN PACIENTES INTERNADOS EN EL SERVICIO DE CLÍNICA MÉDICA DEL HOSPITAL GENERAL DE LUQUE EN LOS MESES DE MARZO 2017 A AGOSTO 2017", cuyo investigador es la Dra. María Jessica Jarolin, y está de acuerdo en participar como tutor temático, cumpliendo con las responsabilidades asignadas a la misma en el protocolo en cuestión.

.....
Dr. Iván Calderoli
Tutor temático

Anexo 5: Aceptación del tutor metodológico

Luque, 27 de Febrero de 2017

Los abajo firmantes, Dr. Iván Calderoli y Dr. Ramón Moreno, dejan constancia por este medio en su carácter de tutor metodológico, que el contenido del Protocolo de Investigación titulado: "INFECCIONES DE PIEL Y PARTES BLANDAS EN PACIENTES INTERNADOS EN EL SERVICIO DE CLÍNICA MÉDICA DEL HOSPITAL GENERAL DE LUQUE EN LOS MESES DE MARZO 2017 A AGOSTO 2017", cuyo autor principal es la Dra. María Jessica Jarolin, reúne características de rigor metodológico en cuanto al diseño, población, tamaño de muestra, asuntos estadísticos y contiene la descripción de los ítems básicos necesarios en un protocolo de investigación clínica. Así mismo expresa su acuerdo para la presentación del citado protocolo al Comité de Ética del Hospital General de Luque para su evaluación correspondiente.

.....
Dr. Iván Calderoli Dr. Ramón Moreno

Anexo 7: Evaluación

Hospital General de Luque
Departamento de Docencia e Investigación
Monografía

Responsable: Dr. Ramón Moreno
HOSPITAL GENERAL DE LUQUE
Jefe del Dpto. Docencia e Investigación

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Assessment of Helicopter Flyover Noise for Tonal Components

By OF Orikpete, TG Leton & OLY Momoh

University of Port Harcourt

Abstract- Tonal noise is produced by bodies rotating at high speeds such as helicopters. Sounds of the same amplitude will produce different responses depending on the tonal content of the sound. Previous studies suggest that tonal noise is more annoying than broadband noise. Nowadays, sound level meters that can detect tonal noise directly are available in the market, but they are very expensive and beyond the reach of most environmental noise researchers. Hence, the need to adopt an analytical method that can be used to analyze and detect the presence of pure tones in helicopter flyover noise. This paper employs the simplified method suggested by the International Organization for Standardization (ISO). An objective study of the total noise environment in Mgbuoshimini Community Nigeria was carried out to determine the presence of tonal components. Results showed that the total noise environment in the Mgbuoshimini community was mostly characterized by broadband noise, with tonal components detected in four locations (Location 7 at 250 Hz, Location 18 at 6.3 kHz, Location 19 at 6.3 kHz, and Location 20 at 6.3 kHz).

Keywords: tonal noise, broadband noise, international organization for standardization, one-third octave bands, mgbuoshimini community.

GJMR-F Classification: NLMC Code: W 84



ASSESSMENT OF HELICOPTER FLYOVER NOISE FOR TONAL COMPONENTS

Strictly as per the compliance and regulations of:



RESEARCH | DIVERSITY | ETHICS

Assessment of Helicopter Flyover Noise for Tonal Components

OF Orikpete ^α, TG Leton ^σ & OLY Momoh ^ρ

Abstract- Tonal noise is produced by bodies rotating at high speeds such as helicopters. Sounds of the same amplitude will produce different responses depending on the tonal content of the sound. Previous studies suggest that tonal noise is more annoying than broadband noise. Nowadays, sound level meters that can detect tonal noise directly are available in the market, but they are very expensive and beyond the reach of most environmental noise researchers. Hence, the need to adopt an analytical method that can be used to analyze and detect the presence of pure tones in helicopter flyover noise. This paper employs the simplified method suggested by the International Organization for Standardization (ISO). An objective study of the total noise environment in Mgbuoshimini Community Nigeria was carried out to determine the presence of tonal components. Results showed that the total noise environment in the Mgbuoshimini community was mostly characterized by broadband noise, with tonal components detected in four locations (Location 7 at 250 Hz, Location 18 at 6.3 kHz, Location 19 at 6.3 kHz, and Location 20 at 6.3 kHz).

Keywords: tonal noise, broadband noise, international organization for standardization, one-third octave bands, mgbuoshimini community.

I. INTRODUCTION

Sound is a form of energy and (Suter, 1991) rightly describes it as “the result of pressure changes in a medium (usually air), caused by vibration or turbulence.” The human ear captures sound within a specific window of the acoustic spectrum, generally within the 20-20000 Hz range. However, it is most responsive to sounds within the mid-frequencies: 1000-10000 Hz (Mariana Alves-Pereira & Castelo Branco, 2000).

(Cantrell, 1975) defined noise as sound which is disagreeable, discordant, or which interferes with the reception of wanted sounds. There are many sounds in the world, but not all of them pollute the environment and hence are not regarded as noise (Kryter, 1982). Medically speaking, noise is one of the leading causes of environmental stress and low-frequency noise is equally as stressful as high-frequency noise (Cho, Hwang, & Choi, 2011). One of the challenges in studying and managing noise is its subjective nature: one person's noise is another's music. People have widely varying reactions to noise. Individual reactions depend on characteristics of the noise, the noise

source, and the individual's attitude to the noise and noise source.

Noise is classified based on its nature into two categories namely: broadband noise and tonal noise. Noise can be said to be tonal if it contains a distinguishable, discrete, continuous note (Greene, Manvell, Scholz, & Enggaard, 2008). Broadband noise has acoustic energy spread out across a wide range of frequencies, whereas a tonal noise has a lot of energy concentrated at certain frequencies – resulting in an audible tone or tones. Tonal noise tends to be more annoying or disturbing and so having the ability to detect and record tones can be very useful.

Noise is usually composed of many frequencies combined (Goelzer, Hansen, & Sehrndt, 2001). To facilitate the comparison of measurements between instruments, frequency analysis bands have been standardized. Thus, the International Organization for Standardization has agreed upon preferred frequency bands for sound measurement and analysis. The widest band used for frequency analysis is the octave band. Occasionally, a little more information about the detailed structure of the noise may be required than the octave band will provide. This can be obtained by selecting narrower bands; for example, one-third octave bands. As the name suggests, these are bands of the frequency of approximately one-third of the width of an octave band.

Nowadays, sound level meters that can detect tonal noise directly are available in the market, but they are very expensive and beyond the reach of most environmental noise researchers. Hence, the need to adopt an analytical method that can be used to analyse and detect the presence of pure tones in helicopter noise. This paper will employ the simplified method suggested by the International Organization for Standardization (ISO). This method tests if the sound pressure level in the one-third octave band of interest exceeds the sound pressure in both adjacent bands by a constant level difference. It is also an extension of previous studies by the current authors (O. Orikpete, Leton, & Momoh, 2020; O. F. Orikpete, Leton, Amah, & Ewim, 2020).

II. AN EMPIRICAL REVIEW OF THE EXISTING LITERATURE

Over the years, many researchers have studied tonality and noise, and how it affects humans and they are briefly reviewed in this section.

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(Edwards, Broderson, Barbour, McCoy, & Johnson, 1979) conducted a study on behalf of the Federal Aviation Administration (FAA) which involved taking field measurements of helicopter flyover noise over communities along the Gulf Coast of Louisiana and Texas and areas adjacent to selected heliports in the United States using two analyzers. One of the analyzers measured the prevailing environmental noise (including helicopter noise), while the other recorded the prevailing environmental noise (excluding helicopter noise). The study also used a social survey to support quantitative measurements by obtaining 272 questionnaire responses from stakeholders. The outcome of the study revealed an average equivalent continuous noise level of 54.5 dB (A) for helicopter flyover noise, a value which exceeded the background noise by 2.5 dB(A); and 63.1 dB(A) for areas adjacent to heliports, which was 13.3 dB(A) above the heliport background noise. Although the results for the social survey showed that 64% of respondents had no problem with helicopter noise, the actual health implications of helicopter noise on residents living within the study area cannot be fully ascertained without a one-third octave frequency band analysis.

Noise of the same intensity will produce different hearing impairment depending on the frequency. In his book, (Yost, 2001) explained that the actual pressure transformation in the human ear depends on the frequency of the acoustic stimulus; pointing out that the pressure increase between the eardrum and the inner ear is greater than 30 dB in the region of 2.5 kHz and that the ratio decreases at frequencies exceeding 2.5 kHz. He further elaborated that hearing impairment depends on the characteristics of the noise that an individual is exposed to, most particularly, the frequency of the noise. In summary, temporary hearing loss will occur when one is exposed to broadband noise at frequencies between 3 and 6 kHz; whereas exposure to a pure tone at frequencies greater than 6 kHz, is likely to result in more severe hearing loss.

Laboratory studies carried out by (Landström, Lundström, & Byström, 1983) as reported by (Leventhall, Pelmear, & Benton, 2003) revealed that a repeating 42 Hz noise at 70 dB resulted in reduced wakefulness, whereas a repeating 1 kHz noise at 30dB resulted in increased wakefulness.

(Phillips, 1995) observed that the central auditory system of the human body is built on frequency-specific processing channels hence assessment and characterization of an acoustic environment would require both the dB level and the frequency distribution considerations. (Mariana Alves-Pereira & Castelo Branco, 2000) shared the same opinion and reiterated that a holistic study of assessment of noise effects should consist of data of both intensity and frequency spectrum analysis because

different organ systems are susceptible to different acoustic frequencies.

(M Alves-Pereira, 1999) also observed that with very few exceptions, environmental noise assessments rarely included a frequency spectra analysis. The study went further to note that scientific investigations into the extra-aural, whole-body, noise-induced pathology issue have been infrequent since the previous decades and that existing data are often regarded as inconclusive.

(Prashanth & Venugopalachar, 2011) investigated the association and contribution of frequency components of industrial noise to auditory and non-auditory effects through a critical review of previous studies published between 1998 and 2009 and found out that most of these noise impact assessment studies were mostly based on inadequate noise intensity. The authors further suggested that for an efficient evaluation of the effects of noise, the frequency spectrum analysis should also be included. They also observed that frequency-related characteristics of noise, for instance intermittent, irregular, tonal, pulse, etc. generated more annoyance than steady noise of the same intensity.

In research by (Helmholtz, 1954) on tone sensation, he stated that the first and most important difference between various sounds experienced by our ear is that between "noises" and "musical tones", based on this, (Hansen, 2010) went further to examine the various aspects of the tone-noise dichotomy - the magnitude of tonal content and the pitch strength. He discovered that partial loudness was far easier and more intuitive to adjust in a magnitude adjustment experiment than the magnitude of tonal content. (Leatherwood, 1987) addressed the effects of simulated advanced turboprop (ATP) interior noise environments with tonal beats on subjective annoyance. He observed that propeller tones within the simulated (ATP) environments caused an increased annoyance as a result of an increase in overall sound pressure level due to tones.

Also, a study by (Suzuki, Kono, & Sone, 1988) on the effect of tonal components on loudness and noisiness of wide-band noise was observed to be less than what was estimated by L_A , $LL(Z)$, $PLdB$, and $PNdB$. It was observed that Zwicker's Loudness Level competently evaluates the effect of the test stimuli used. He concluded by stating that conventional positive tone correction is not always required in the evaluation of environmental noise.

In a research by (Angerer, McCurdy, & Erickson, 1991), it was discovered that a model developed using loudness and tonality is a better predictor of an annoyance than either A-weighted sound pressure level (L_A) or overall sound pressure level (OASPL). Similarly, in another research by (Vormann, Meis, Mellert, & Schick, 1999) on a new approach for evaluating tonal noise, they discovered that frequency

has a distinct effect on tonal-noise perception. (Mirowska, 2001) presented a Polish recommendation for the estimation of low-frequency noise (LFN) in homes as a result of appliances installed within or outside the building. Using the accepted A10 characteristic rating curve for noise spectra measurement in dwellings, he observed that when the sound pressure levels of noise exceeded the A10 curve, low-frequency noise was observed to be annoying. Similarly, (Pawlaczyk-Łuszczynska, Szymczak, Dudarewicz, & Śliwińska-Kowalska, 2006) researched ways to compute low-frequency noise (LFN) in the working environment to prevent annoyance and its consequences on work performance. All proposed LFN exposure criteria: the assessment method based on the low frequency equivalent continuous A-weighted sound SPL, frequency analysis in 1/3-octave bands and the criterion curves based on the hearing threshold level or A-weighting characteristics was able to predict annoyance experienced from LFN in occupational settings.

Several investigations have also specifically focused on the effects of aircraft noise on human annoyance rating and performance. As discovered by (More & Davies, 2010) from the test conducted on the effect of noise characteristics on people's response to aircraft noise; an increase in annoyance rating was observed when both tonalness and roughness were varied with loudness being kept constant. Loudness was found to be the major contributor to annoyance while tonalness and roughness also influenced the annoyance ratings. In another study (Li, Smith, & Zhang, 2010) made use of a one-quarter-scale A340 main landing gear model to identify and control a source of tonal-noise that had been noted in aircraft landing gear noise during the landing process of an aircraft. Several methods were used to control the tone, the most practical of which was either rotation of the hinged door, so that it was no longer parallel to the leg door, or complete removal of the hinged door. Also, a new signal processing tool for counter-rotating open rotors technology for aircraft propulsion applications was developed by (Sree, 2013). It was verified that the new technique provides almost the same results whether the data segment selection is made with respect to the forward rotor or aft rotor "1/rev" signal, particularly when the two rotor speeds are about the same.

Also, mechanical buildings and the effect of noises generated from rotating components on humans have been understudied. Most of these studies examined human perception of noise, one of which was the study on differences in task performance and perception under ventilation-type background noise spectra with differing tonality by (Ryherd & Wang, 2008). The result showed that perception trends for tonality, annoyance, and distraction changes based on the frequency and

prominence of discrete tones in noise. Furthermore (Ryherd & Wang, 2010) examined the effects of noise on human task performance and perception from mechanical systems in buildings with tonal components using an office-like environment. Higher ratings of loudness followed by roar, rumble, tones, and perception of more low-frequency rumble were noticed to cause higher annoyance and distraction which led to reduced task performance. In a similar study by (Francis, 2014) in an investigation on annoyance thresholds, the background noise level was found out to affect perceptions of annoyance. Also (Lee & Wang, 2014) discovered that loudness and tonality both have a significant influence on noise-induced annoyance and also that maximum allowable tonal components decrease when the background noise level is high. They went further to state that ANSI Loudness Level and Tonal Audibility are the most reliable metrics to reflect human annoyance perception.

(Lee, Francis, & Wang, 2017) studied the relationship between human perception and noises with tones in the built environment. Correlation analysis with noise metrics and subjective perception ratings suggested that ANSI Loudness Level among the tested loudness metrics corresponded most strongly with annoyance perception. In a review by (Hansen, Verhey, & Weber, 2011) it was reported that high correlation of the magnitude of tonal content and partial loudness indicates that the magnitude of strong tonal components may be assessed by quantifying the partial loudness of the tonal components. (Sottek, 2014) presented a model validation which exploit results of new listening test. It used bandpass-filtered noise signals with varying steep filter slopes and model improvements to adequately indicate the perceived tonality of technical sounds with low sound pressure levels. A research by (White, Bronkhorst, & Meeter, 2017) sought to find out if the continuous rating of aircraft noise above noises from other sources with similar intensity is due to the source identity of the noise. He concluded that annoyance was influenced by both identifiability and the presence of tonal components.

(Oliva, Hongisto, & Haapakangas, 2017) researched on the difference in tonal and non-tonal sounds at overall levels close to typical regulated levels inside residential dwellings. It was observed that penalty depended on the tonal frequency and the tonal audibility. Also, penalty values were different with different overall levels especially at high tonal frequencies. A similar study conducted by (Hongisto, Saarinen, & Oliva, 2019) at overall level 25 dB L_{eq} , which is close to regulated levels in residential dwellings disagrees with penalty values applied in many national regulations, when the overall level is low at 25 dB L_{eq} .

(Lee et al., 2017) investigated the relationship between current noise metrics, annoyance and task

performance under assorted tonal noise conditions through subjective testing. The task performance showed that loudness metrics are most highly correlated with annoyance responses while tonality metrics demonstrate relatively less but also significant correlation with annoyance.

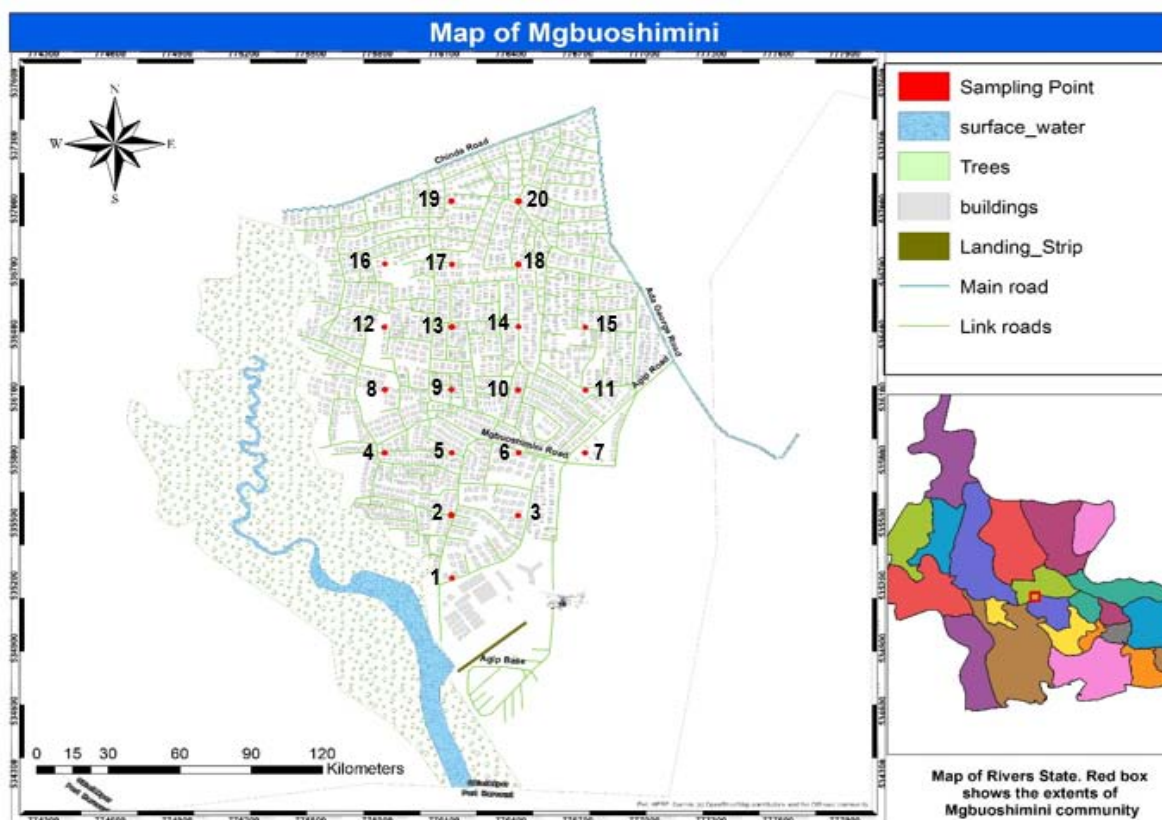
A study by (Hajczak, Sanders, & Druault, 2019) focused on the boundary element method (BEM) with a simple harmonic point source model used to characterize the resonance between the two facing cylindrical cavities in the wheels of a generic nose landing gear LAGOON, where a flow independent of tonal noise emission had been reported experimentally. It was observed that the facing cavities present much sharper resonances than the single cavity, and that the presence of the main strut only increased the amplification of the axisymmetric mode.

Recently, (Radosz, 2018) observed that noise with medium and high frequencies of tonal components were regarded as more annoying in an experiment carried out on the relationship between human perception and noise with tonal components in a working environment. (Torjussen, 2019) observed that the Aures tonality method outperforms the EPNL tone

correction approach when assessing the subjective response to aircraft noise during take-off with the presence of multiple complex tones. A research by (Wallner, Hutter, & Moshhammer, 2019) showed that a scientific approach within a complex environmental noise problem could foster an agreement about noise protection measures.

III. STUDY AREA

Mgbuoshimini is a community located in Obio Akpor Local Government Area (LGA) of Rivers State. It lies on Latitude $4^{\circ} 48' 30''\text{N}$ and Longitude $6^{\circ} 58' 22''\text{E}$. It is surrounded by Nkbuodahia, Rumu-Olumene and Azumini communities to the West, Orowokwo-Woji, Rumueme and Rumuepirikom to the North, Diobu and Elechi to the East and Amatagwolo and Eremogbogoro communities to the South. The map for Mgbuoshimini is presented in Figure 1 using the geographical information system (GIS). The heliport in the community is located at the Nigerian Agip Oil Company base, and used for offshore transportation of personnel and equipment with over six thousand flights (6 000) per year.



Source: Department of geography and regional planning, University of Port Harcourt

Figure 1: Map of Mgbuoshimini community

IV. MATERIALS AND METHOD

a) Instrumentation and description of measurement procedure

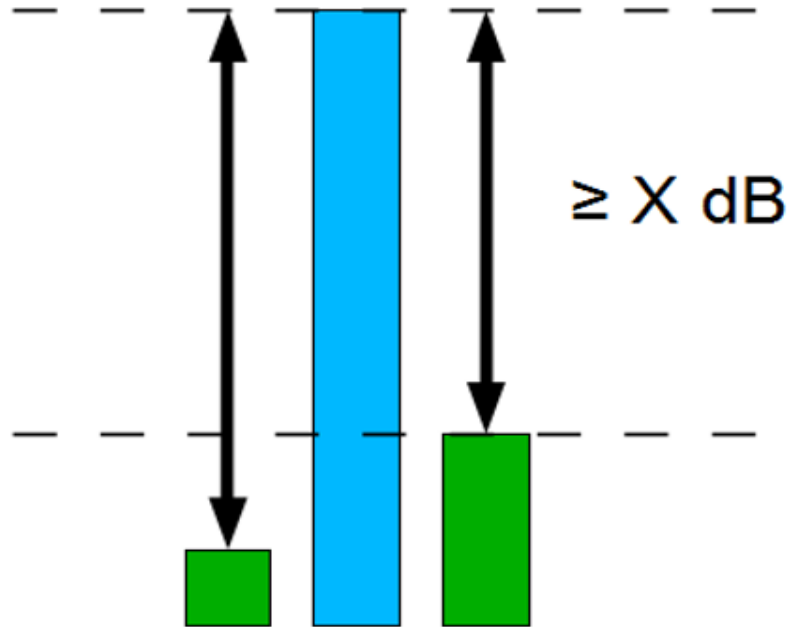
Measurements were obtained between August 2019 and March 2020. The study area was divided into 20 different locations as shown in Figure 1. Measurements were taken from 7 am to 5 pm at each location using two integrating sound analyzers; one measured the sound level including the contribution from helicopters and the other the sound level excluding that from helicopters (this was switched to IDLE mode any time a helicopter was audible). Location coordinates were obtained using a handheld Global Positioning System (GPS) device.

b) Tonal Noise Detection Method

(ISO, 2003) provides objective one-third octave band assessment procedure (shown in Figure 2) to be

used to verify the presence of audible tones if their presence is in dispute. This method is based on one-third octave analysis. The one-third octave spectrum is searched for peaks and the search criterion is the level difference between a peak and its adjacent bands. When this difference reaches a certain frequency dependent level a tone is found. The standard defines different levels of threshold depending upon the frequency of the one-third octave band and these are:

25Hz to 125Hz:	15 dB
160Hz to 400Hz:	8 dB
500Hz to 10kHz:	6 dB



Source: (Morillas, González, & Gozalo, 2016)

Figure 2: Method for detecting tonal noise from one-third octave frequency band

V. RESULTS AND DISCUSSION

Figures 3 to 22 shows the background noise profile for the 20 locations. Based on the stated criteria (ISO 1996-2), it can be seen that in the figures, there is no tonal noise present for background noise for all twenty locations.

Table 1: Equivalent Continuous Noise Levels at various frequencies for Background Noise (Excluding Helicopter Noise)

Location	L_{eq}	12.5Hz	16Hz	20Hz	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz
1	76.59	10.32	9.58	12.33	21.46	26.77	42.86	43.77	37.46	42.55	49.76	52.54	50.99	53.25	54.67	54.70	56.45
2	71.49	12.5	10.30	8.58	18.30	31.52	34.41	40.37	41.47	48.34	45.13	48.66	52.28	51.58	52.35	55.27	57.10
3	70.95	4.25	5.29	6.92	13.26	22.99	27.26	30.92	38.02	43.95	44.27	47.60	48.45	50.09	51.48	54.01	57.36
4	64.65	4.51	3.20	10.76	19.85	28.62	34.81	40.04	40.03	38.61	41.03	43.81	43.28	45.27	46.99	47.42	48.29
5	66.36	6.18	8.92	7.71	12.83	16.42	19.50	26.46	40.34	45.69	39.71	37.54	39.65	46.31	48.44	49.12	51.84
6	71.94	4.50	7.87	26.70	23.44	28.59	35.09	35.13	40.25	41.08	44.92	47.84	53.55	57.67	59.70	59.04	61.13
7	50.46	2.75	1.46	4.02	5.18	8.59	11.47	15.04	14.94	17.17	24.86	29.16	28.12	33.41	38.09	36.18	41.60
8	65.41	4.05	3.66	11.14	19.50	29.30	35.44	40.69	40.80	39.32	41.92	44.49	43.89	45.99	47.76	48.22	48.50
9	66.07	6.33	9.05	7.85	13.03	16.80	19.84	26.61	40.44	46.59	40.39	37.60	39.73	46.92	48.32	47.60	50.16
10	72.20	4.79	7.81	26.63	23.42	28.67	35.18	35.56	40.73	41.00	44.24	47.50	54.32	58.61	60.34	59.34	61.22
11	69.61	1.98	5.45	19.70	19.69	25.79	27.46	31.06	35.79	41.23	41.33	42.62	42.35	56.46	52.87	54.47	58.97
12	60.35	3.14	2.79	3.55	7.53	11.94	15.49	20.56	20.95	25.98	32.53	31.50	32.62	36.21	37.99	39.53	46.82
13	63.09	6.23	8.93	7.72	12.49	15.74	18.51	25.11	36.04	41.01	37.55	36.42	37.95	43.23	44.76	47.20	50.02
14	55.26	1.94	6.72	3.95	6.30	12.08	16.12	21.49	26.23	29.89	29.43	30.37	33.18	36.83	37.86	38.31	46.39
15	55.86	4.74	2.46	6.63	9.58	10.97	15.54	17.66	22.82	24.36	32.57	30.16	32.31	36.60	41.63	41.32	43.28
16	53.72	1.21	1.84	2.36	3.81	7.05	14.10	13.51	15.44	18.87	29.32	28.06	29.07	32.52	33.82	37.70	37.13
17	58.08	4.31	2.67	4.51	8.44	11.09	16.00	19.37	20.68	29.67	29.33	30.05	33.06	35.73	39.54	38.89	45.13
18	53.64	2.13	2.17	1.92	4.02	6.71	12.56	14.45	14.06	27.09	26.00	25.50	29.17	29.62	33.68	35.18	40.78
19	52.79	1.32	1.14	3.24	6.32	4.65	13.53	17.31	15.13	24.84	26.40	26.34	30.13	31.20	36.54	36.62	39.34
20	53.74	3.21	1.17	3.04	4.10	8.03	12.87	15.33	16.15	19.62	26.57	25.53	28.31	29.29	34.40	36.00	40.32

Table 1: Equivalent Continuous Noise Levels at various frequencies for Background Noise (Excluding Helicopter Noise)... Continue

Locati on	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz	12.5kHz	16kHz	20kHz
1	58.49	59.97	60.44	60.18	60.94	59.78	59.63	58.44	57.21	55.04	52.35	49.67	47.09	43.57	38.61	31.35	25.49
2	59.27	59.62	59.13	59.77	59.37	60.31	59.76	58.39	57.52	55.90	53.25	51.02	50.16	46.86	41.57	34.61	27.85
3	60.82	61.52	61.70	61.78	60.66	61.21	58.86	57.65	60.61	54.75	51.56	47.80	45.69	41.16	37.39	31.79	23.64
4	51.08	53.84	56.15	56.10	56.12	55.10	54.45	51.03	50.82	48.95	45.77	41.83	42.00	36.13	30.29	24.98	21.79
5	54.73	60.34	58.40	54.82	55.48	57.28	51.93	53.00	52.24	49.59	45.73	42.84	42.47	36.62	34.32	26.91	20.99
6	62.61	61.41	61.88	61.76	60.86	61.42	59.96	57.86	57.48	55.75	52.23	48.66	47.49	40.45	34.69	30.04	30.37
7	37.26	39.67	41.22	41.80	41.74	37.45	39.81	37.80	41.60	39.83	32.29	33.01	29.71	23.10	22.49	14.90	15.16
8	51.32	54.02	56.82	56.85	56.98	55.96	55.23	51.81	51.54	49.62	46.32	42.12	42.63	36.29	30.16	24.71	21.44
9	53.94	60.82	56.99	54.01	54.71	56.68	51.81	52.91	51.76	49.37	46.10	42.94	42.88	36.71	34.81	27.31	21.24
10	62.35	61.94	61.66	61.72	61.08	60.70	60.30	58.00	57.54	56.19	52.47	48.68	47.88	40.57	34.74	30.32	31.22
11	60.03	58.81	60.72	58.66	54.18	54.67	53.86	52.57	50.98	55.79	46.98	43.72	46.52	38.42	32.06	25.97	22.13
12	41.14	48.91	44.60	45.90	46.13	47.29	42.65	44.41	44.54	43.55	38.64	37.78	36.68	32.94	26.33	27.72	17.50
13	54.43	54.23	53.31	51.05	52.03	52.43	48.73	48.58	48.40	47.00	44.24	41.08	43.69	35.32	35.74	27.92	20.94
14	43.60	49.71	51.08	45.30	47.63	48.36	44.11	43.61	46.39	42.72	38.63	36.59	34.35	29.17	25.11	20.73	18.51
15	50.40	45.85	45.85	46.48	46.58	47.02	43.93	44.93	43.96	43.13	41.86	35.90	33.78	26.27	25.95	18.13	18.25
16	37.99	40.87	41.43	41.98	41.14	39.90	39.62	41.14	40.00	36.87	35.32	34.21	36.39	32.35	23.51	18.21	15.09
17	44.16	50.52	46.39	43.15	45.63	45.18	42.05	41.55	44.14	40.53	38.65	38.51	40.83	30.00	27.79	19.77	19.65
18	41.69	40.81	43.93	39.26	41.52	37.42	39.56	37.53	41.13	37.07	34.46	36.48	30.84	21.54	22.38	16.23	16.42
19	41.18	42.98	41.13	38.93	38.84	40.22	40.10	38.39	40.36	35.80	32.73	35.21	36.38	21.38	21.24	15.84	14.71
20	36.75	43.03	40.24	39.48	40.41	41.52	39.55	39.25	42.28	36.21	32.74	35.98	39.82	25.99	21.85	16.65	15.81

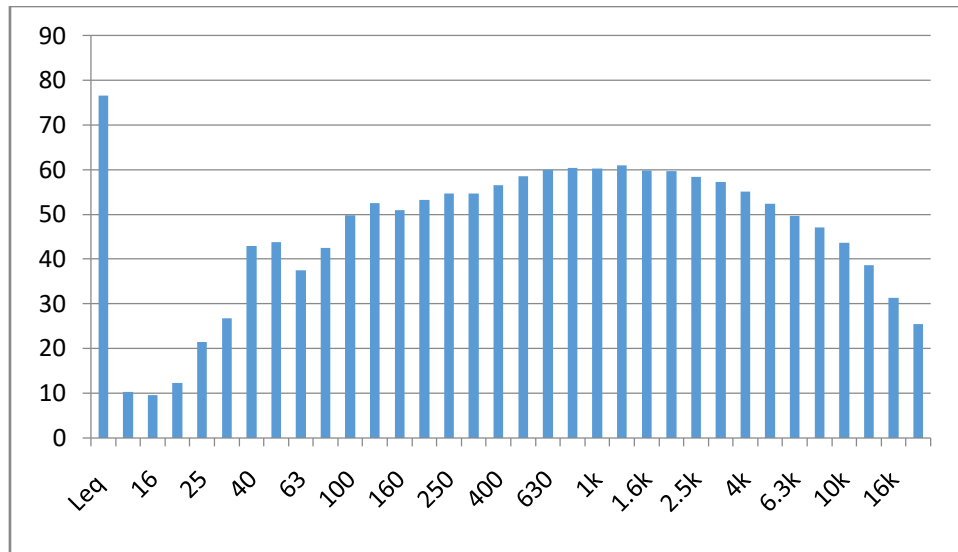


Figure 3: One-third octave frequency band at Location 1

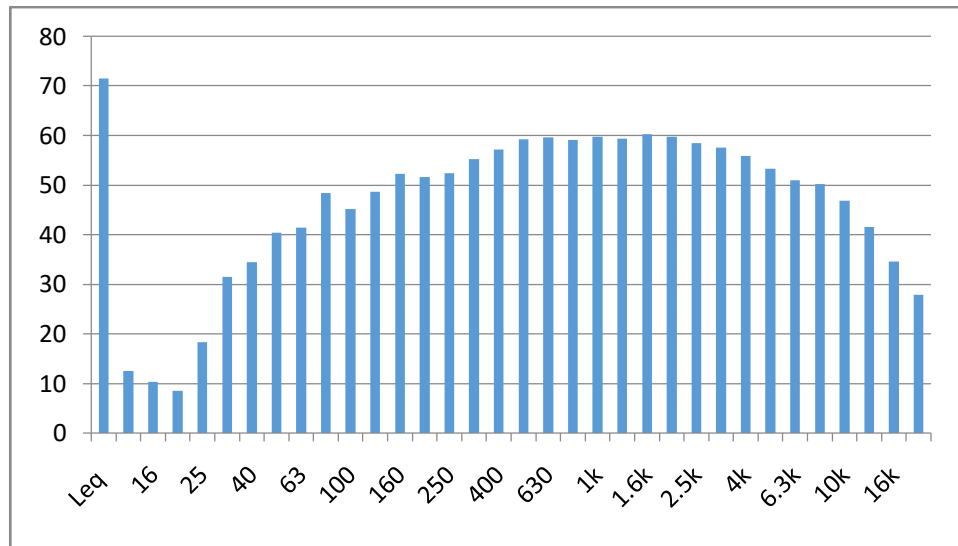


Figure 4: One-third octave frequency band at Location 2

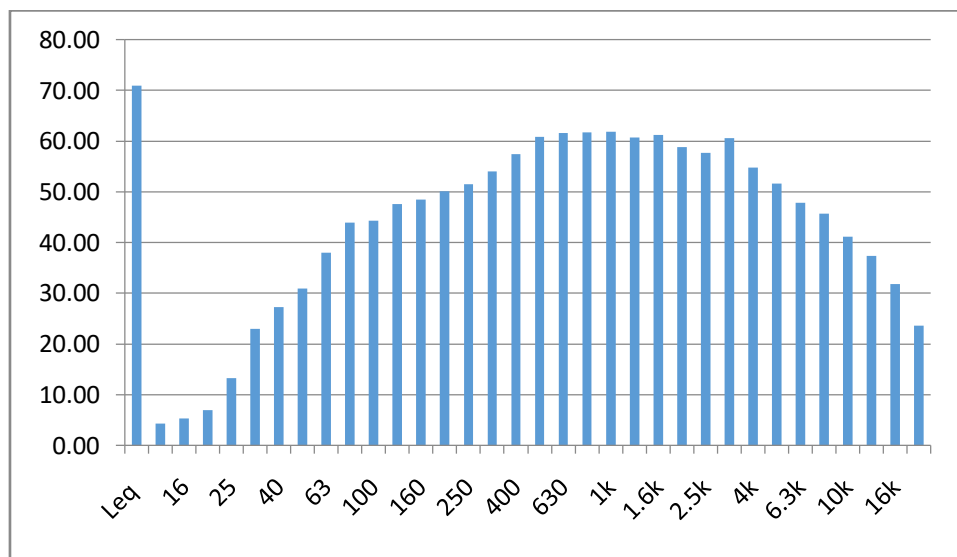


Figure 5: One-third octave frequency band at Location 3

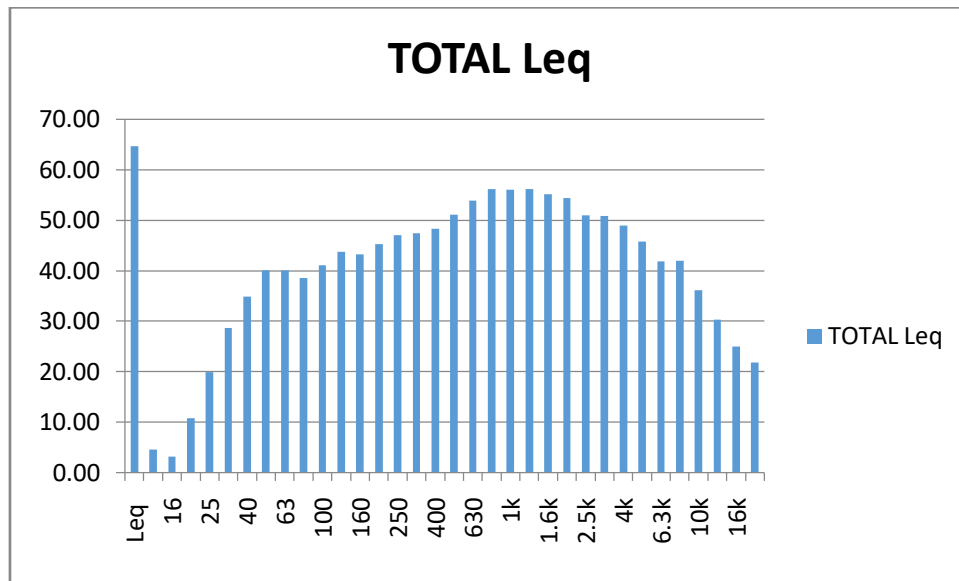


Figure 6: One-third octave frequency band at Location 4

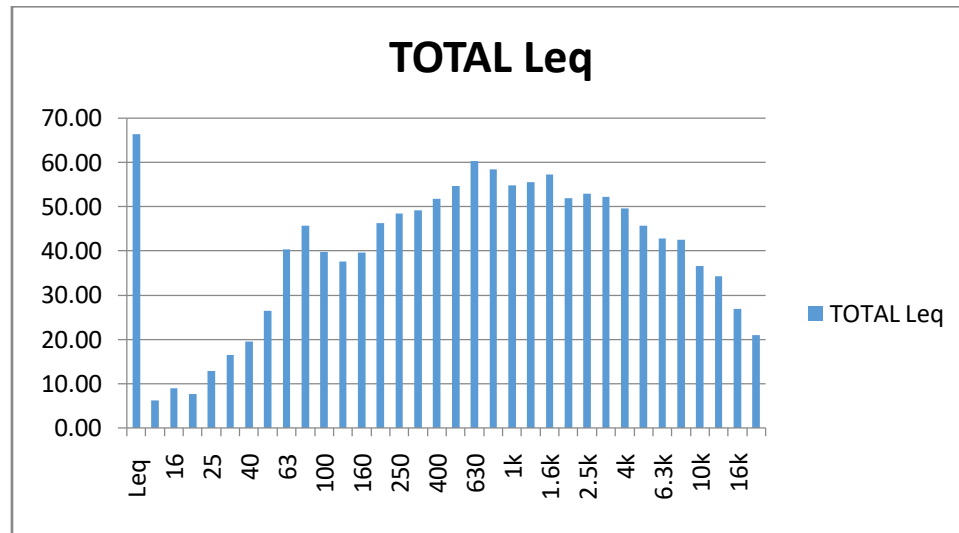


Figure 7: One-third octave frequency band at Location 5

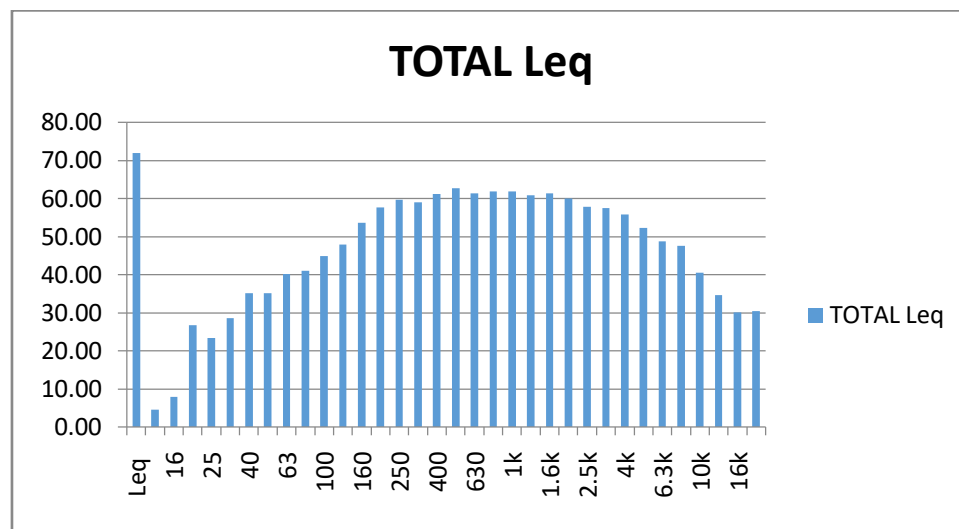


Figure 8: One-third octave frequency band at Location 6

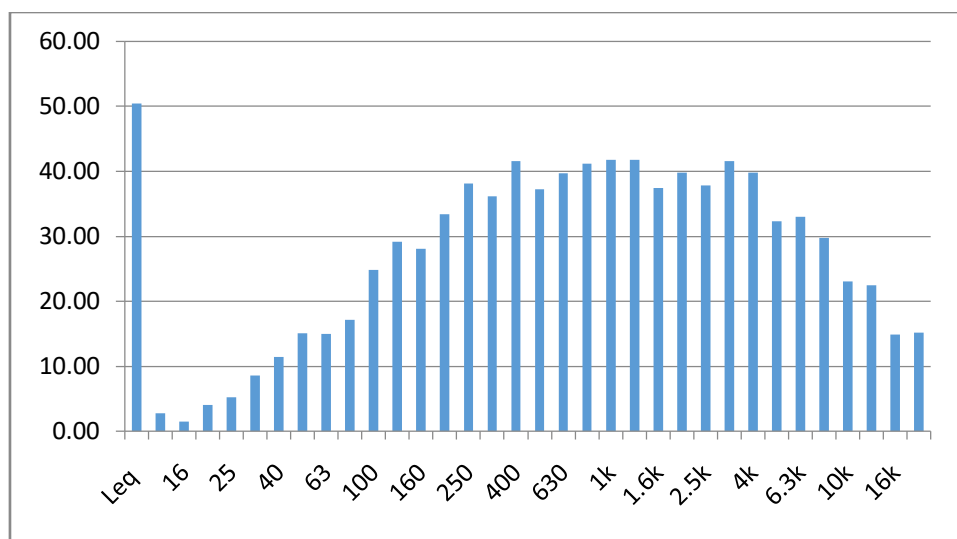


Figure 9: One-third octave frequency band at Location 7

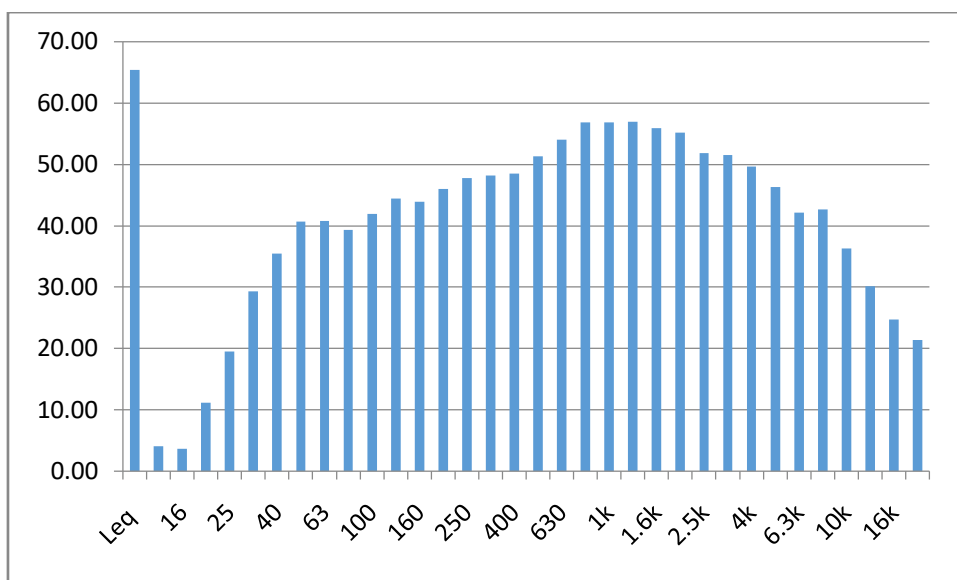


Figure 10: One-third octave frequency band at Location 8

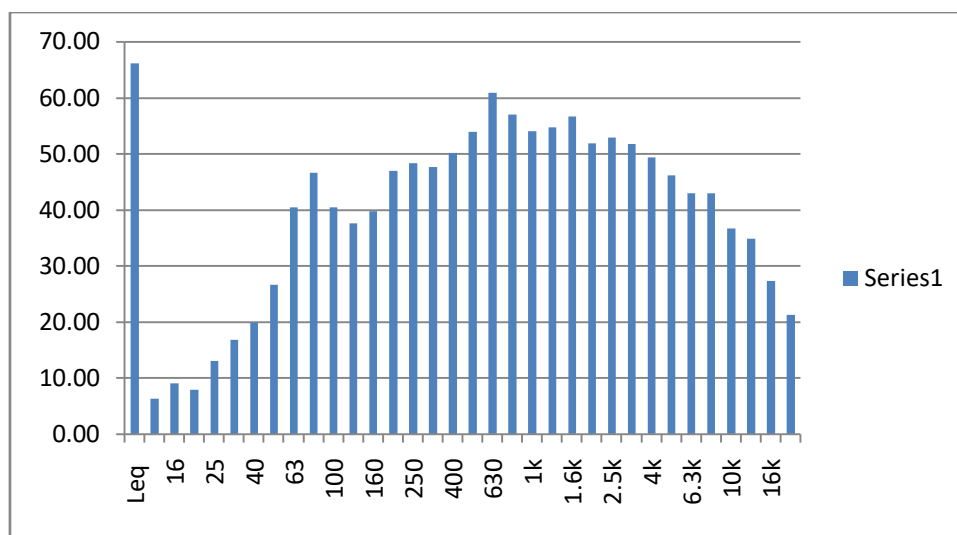


Figure 11: One-third octave frequency band at Location 9

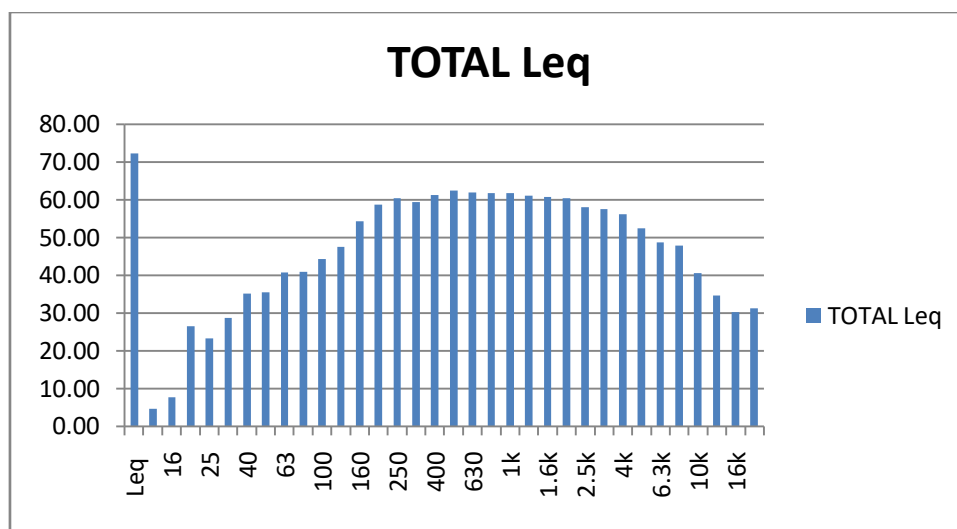


Figure 12: One-third octave frequency band at Location 10

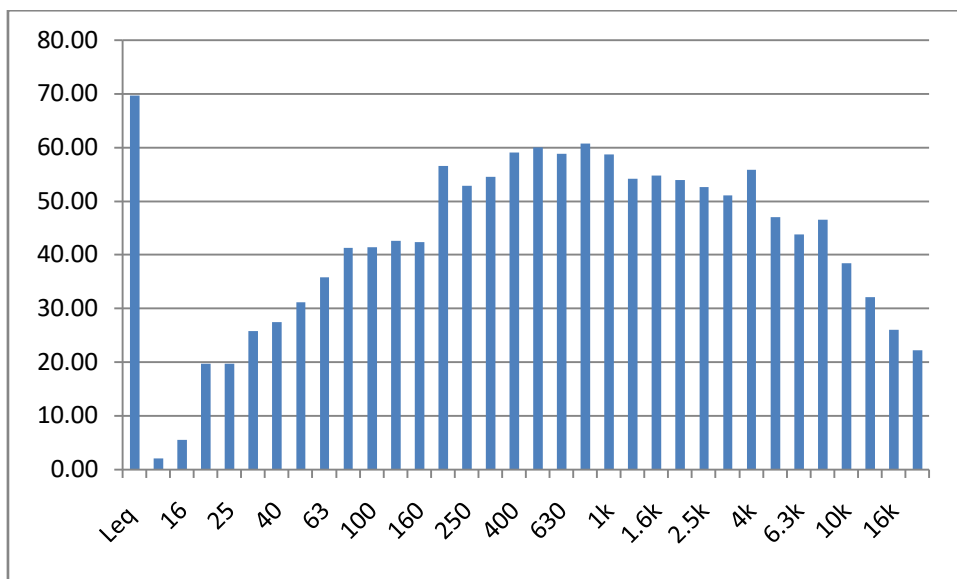


Figure 13: One-third octave frequency band at Location 11

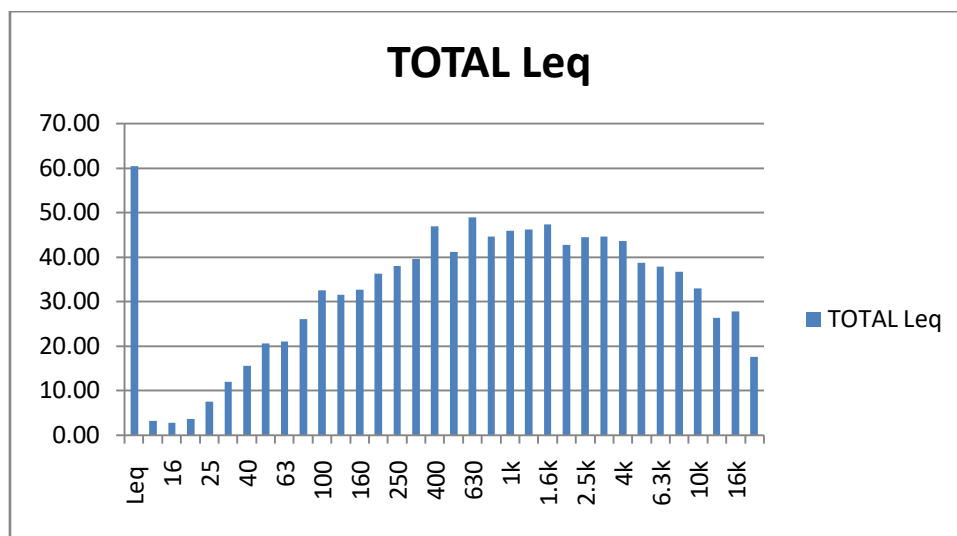


Figure 14: One-third octave frequency band at Location 12

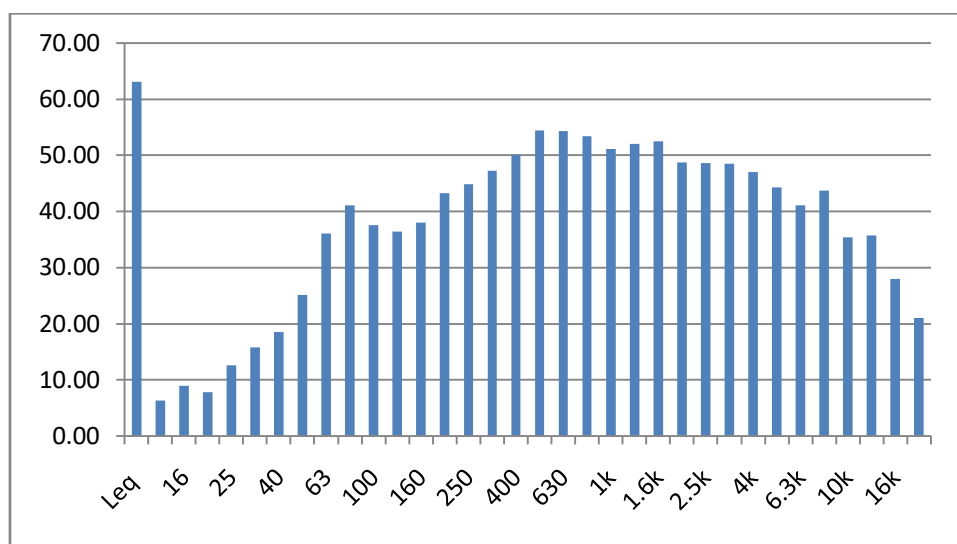


Figure 15: One-third octave frequency band at Location 13

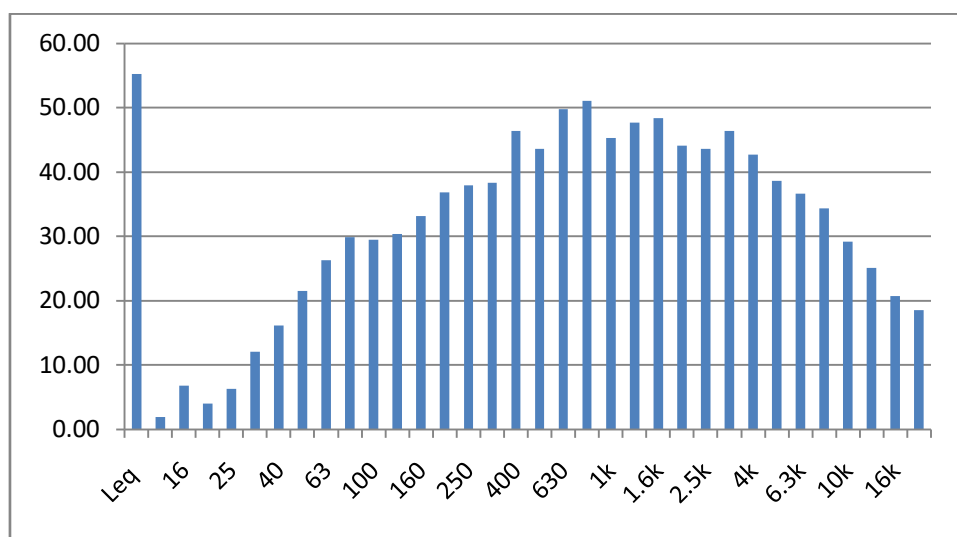


Figure 16: One-third octave frequency band at Location 14

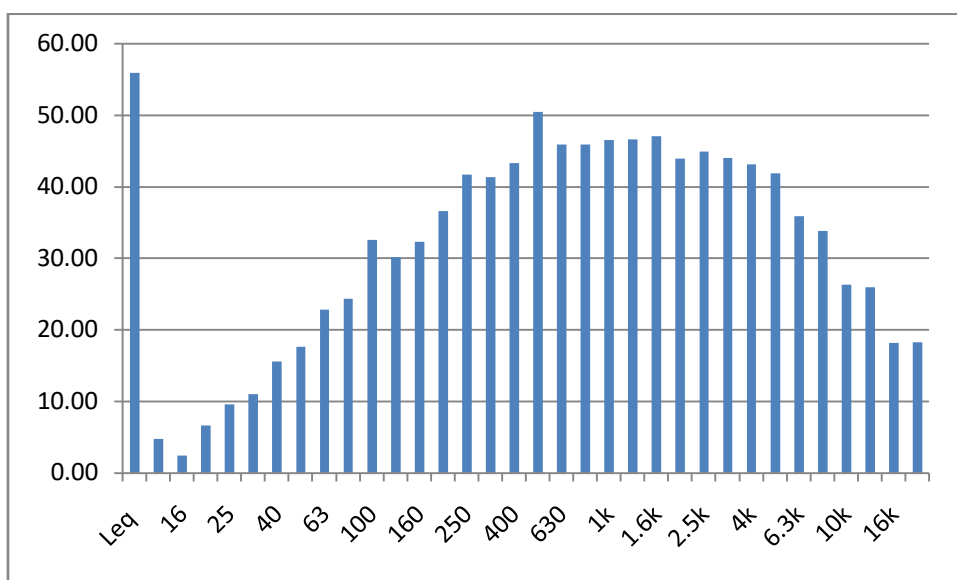


Figure 17: One-third octave frequency band at Location 15

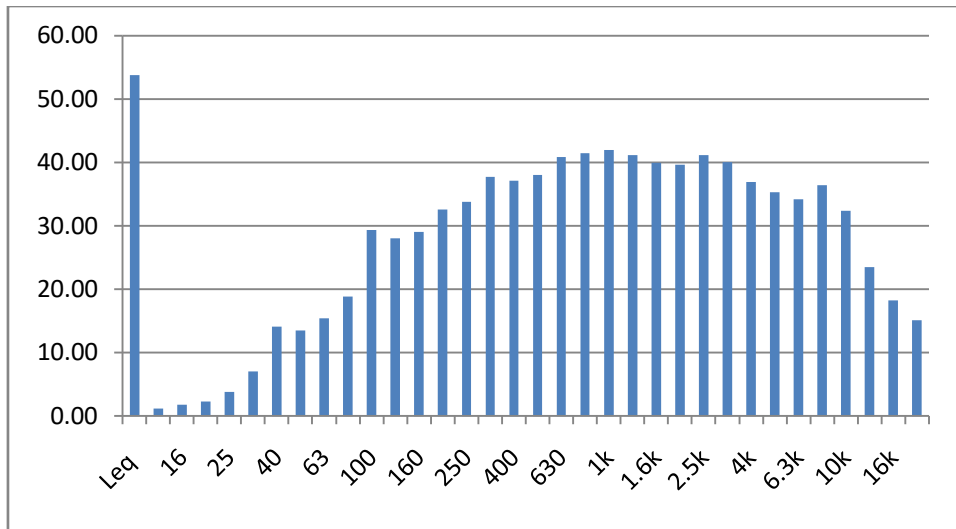


Figure 18: One-third octave frequency band at Location 16

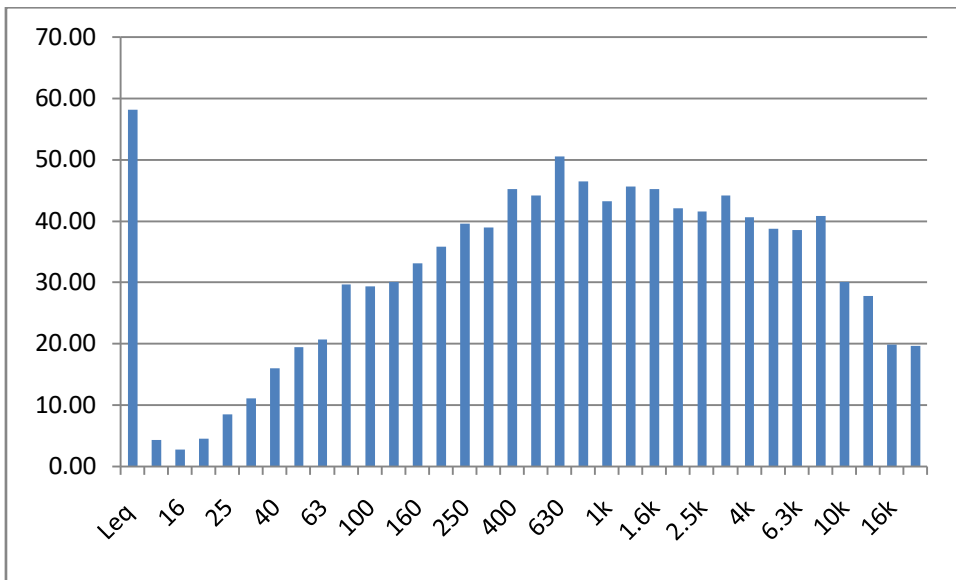


Figure 19: One-third octave frequency band at Location 17

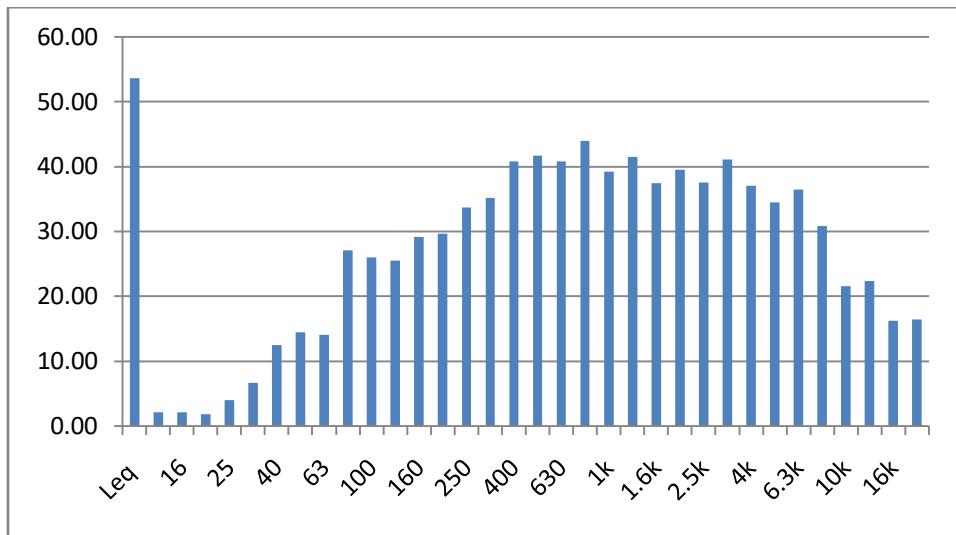


Figure 20: One-third octave frequency band at Location 18

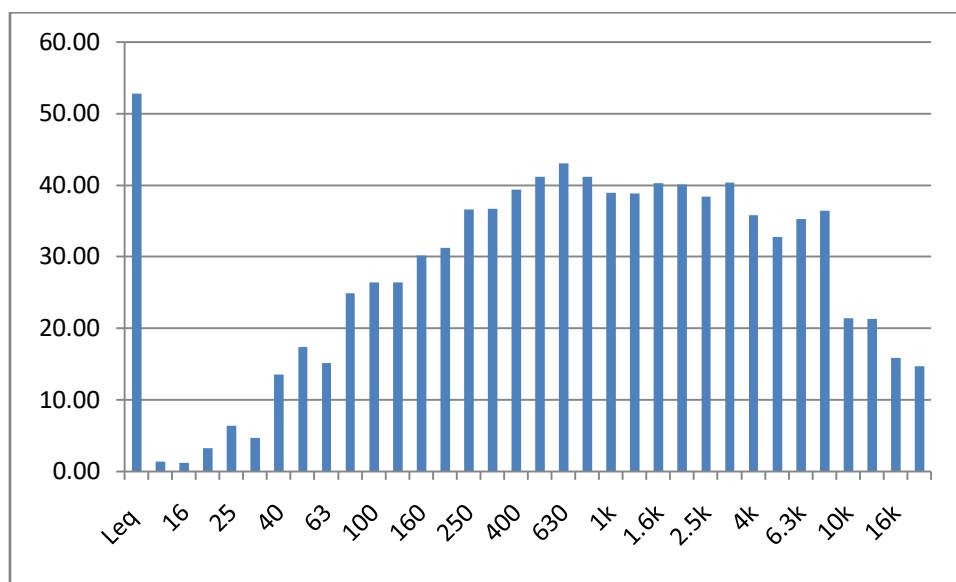


Figure 21: One-third octave frequency band at Location 19

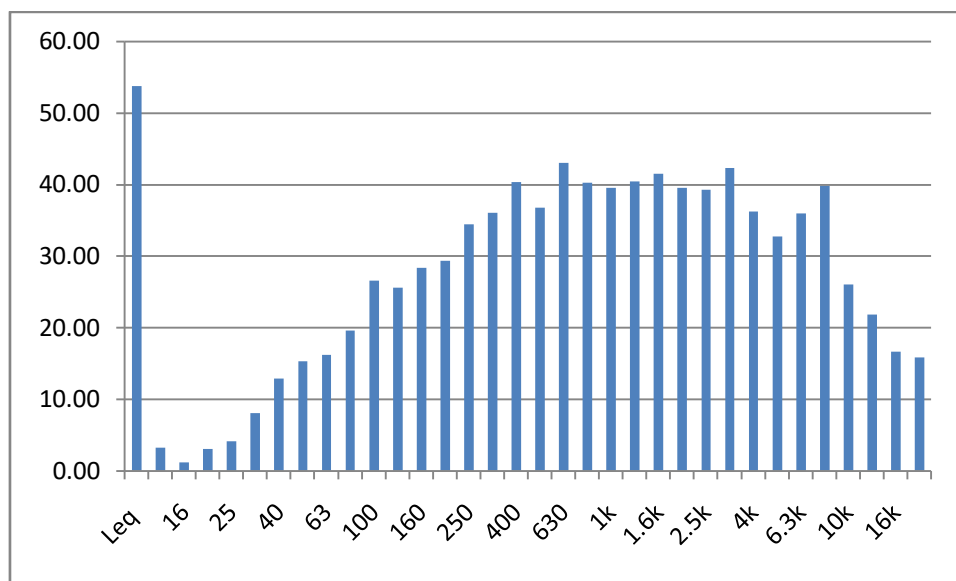


Figure 22: One-third octave frequency band at Location 20

Table 2 represents the total sound including background noise.

Table 2: Equivalent Continuous Noise Levels at various frequencies for Combined Noise (Including Helicopter Noise)

Location	Leq	12.5Hz	16Hz	20Hz	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz
1	80.20	15.50	8.50	11.60	21.03	27.46	42.92	43.13	39.52	44.28	48.91	52.77	56.46	53.21	56.48	60.00	63.91
2	72.87	9.84	17.03	19.83	18.29	31.63	38.04	41.34	41.49	48.19	45.52	50.44	54.65	53.88	54.53	56.04	59.44
3	73.74	4.32	5.35	29.50	19.01	23.92	36.40	32.62	41.83	46.69	48.07	51.99	52.38	55.26	57.91	60.23	61.70
4	72.60	3.16	8.47	20.69	23.52	29.69	33.66	39.91	49.16	40.36	42.70	48.65	46.84	49.51	53.04	56.38	59.74
5	75.47	4.11	7.82	37.85	33.86	30.89	43.25	38.18	49.72	47.76	54.57	59.99	56.71	59.53	62.46	65.58	69.22
6	75.23	4.97	6.47	27.84	25.71	28.19	34.12	37.65	41.30	45.00	51.49	57.25	62.18	64.31	66.17	65.77	65.14
7	71.26	3.83	0.93	25.67	21.08	24.00	22.32	32.18	38.79	42.88	38.63	48.66	54.35	50.14	63.43	47.64	48.26
8	70.51	2.67	5.31	16.32	22.19	28.38	33.55	38.78	49.07	38.59	40.61	45.44	44.37	48.47	51.65	54.56	56.62
9	70.37	4.38	7.29	36.91	33.90	28.63	41.99	33.59	48.22	45.58	50.87	54.51	52.83	57.75	59.30	65.44	66.43
10	75.85	3.55	5.82	26.48	24.91	27.69	33.92	37.74	41.57	44.15	47.28	56.40	61.90	62.89	66.17	64.81	63.35
11	72.95	1.72	3.53	20.59	23.49	24.46	28.20	34.14	37.26	41.36	46.74	53.89	57.97	61.15	64.04	61.29	62.75
12	68.28	2.18	2.53	28.80	28.88	21.41	37.79	29.99	44.77	32.04	45.69	53.87	46.59	54.00	56.56	58.69	66.19
13	68.79	4.27	6.89	31.18	33.38	25.46	37.38	33.98	47.84	40.40	50.27	54.90	51.74	57.71	58.02	63.19	66.39
14	67.95	1.16	4.95	28.78	28.75	21.74	32.87	31.08	43.29	32.44	47.64	51.67	50.99	56.69	56.44	62.50	62.18
15	67.47	3.03	1.56	27.98	33.53	25.99	33.65	31.04	44.09	33.69	47.69	49.40	49.32	57.33	55.16	58.82	65.28
16	67.81	0.87	2.25	26.58	28.27	18.39	34.40	28.09	42.18	26.87	42.45	49.43	46.93	48.49	53.47	53.59	66.36
17	67.90	2.75	1.64	30.86	30.71	25.94	37.99	32.99	44.51	35.77	46.14	50.90	48.88	57.10	53.26	58.73	66.75
18	67.43	1.27	1.58	29.84	28.88	21.51	34.25	27.18	43.21	31.08	41.63	45.03	48.72	52.58	51.79	54.58	62.85
19	67.64	1.16	0.69	30.82	26.37	23.30	36.45	33.03	40.38	30.62	44.55	50.91	44.32	56.76	51.81	56.30	64.15
20	67.32	2.19	0.73	27.68	26.02	20.23	32.41	31.96	41.32	30.31	43.77	45.27	46.20	52.90	53.30	55.83	62.77

Location	500H z	630H z	800H z	1kHz	1.25kHz z	1.6kHz z	2kHz	2.5kHz z	3.15kHz z	4kHz	5kHz	6.3kHz z	8kHz	10kHz z	12.5kHz z	16kHz z	20kHz z
1	65.01	64.88	66.12	64.69	65.23	69.95	67.44	70.64	67.67	60.82	61.01	54.08	50.83	49.04	41.62	34.79	27.66
2	59.66	62.25	61.70	61.27	60.42	61.96	60.80	59.25	58.57	56.89	54.49	52.09	50.54	47.47	42.02	34.57	27.38
3	64.07	64.40	64.45	64.28	63.51	63.13	61.42	60.36	60.61	56.71	53.81	50.93	48.42	41.96	36.61	30.62	23.89
4	59.92	61.94	62.24	63.81	64.81	61.16	59.39	58.56	58.82	58.01	56.93	57.11	60.17	48.68	54.07	48.48	35.59
5	67.90	67.31	67.26	67.45	66.50	65.44	63.41	64.02	61.70	59.99	57.63	54.17	49.05	41.59	34.99	26.04	20.62
6	66.05	64.68	63.67	63.66	62.01	61.19	59.75	58.34	57.36	55.54	52.17	49.01	46.84	40.91	35.77	31.79	29.19
7	47.88	51.69	49.86	50.35	46.59	44.73	50.83	44.53	46.84	51.80	48.45	45.34	41.70	29.43	28.04	26.11	18.64
8	55.33	57.53	60.93	64.22	61.57	60.43	56.25	54.77	56.23	53.89	54.49	52.98	59.16	48.15	50.87	45.61	31.06
9	65.76	65.99	63.73	64.97	61.56	64.68	62.76	63.18	58.68	55.95	52.64	53.41	47.17	39.10	34.18	25.50	20.42
10	65.29	62.13	61.56	61.97	62.11	58.76	58.41	56.78	57.75	54.30	51.49	47.55	46.13	39.54	35.65	31.71	28.97
11	61.62	60.22	59.51	61.08	58.14	53.36	52.38	53.72	55.18	53.99	46.47	45.07	45.13	38.63	34.77	26.72	22.68
12	63.47	56.42	59.22	57.05	57.91	58.06	54.67	57.65	51.85	46.36	48.00	48.43	42.20	37.54	27.14	24.92	16.04
13	64.42	61.72	63.19	60.54	59.75	61.67	59.56	58.65	55.77	51.76	51.51	52.37	44.78	38.83	34.15	25.37	19.01
14	60.51	61.20	62.82	58.76	57.96	56.90	58.42	58.94	56.12	47.74	47.13	49.83	39.07	37.07	28.16	18.69	17.15
15	60.45	59.04	62.39	59.54	56.21	60.28	57.23	57.38	52.53	50.02	48.99	51.01	42.06	37.96	28.45	17.96	16.32
16	62.65	55.06	56.03	56.00	53.76	52.28	49.72	55.17	50.41	43.34	44.69	48.87	40.30	35.03	25.08	15.82	12.97
17	59.62	56.72	62.39	58.38	55.89	58.06	56.74	57.82	51.99	49.07	47.26	51.16	40.62	34.08	29.71	18.74	18.16
18	54.99	54.38	60.56	55.77	52.98	57.86	51.18	55.45	49.31	46.51	43.74	52.02	37.68	33.88	27.64	15.37	14.77
19	55.58	56.81	57.15	58.95	51.27	54.97	51.57	52.86	50.93	46.70	44.07	50.51	37.56	29.09	26.31	16.97	14.32
20	59.71	56.56	60.08	54.86	55.48	55.30	51.98	52.56	49.73	46.42	41.68	50.24	39.04	33.91	25.88	15.81	14.16

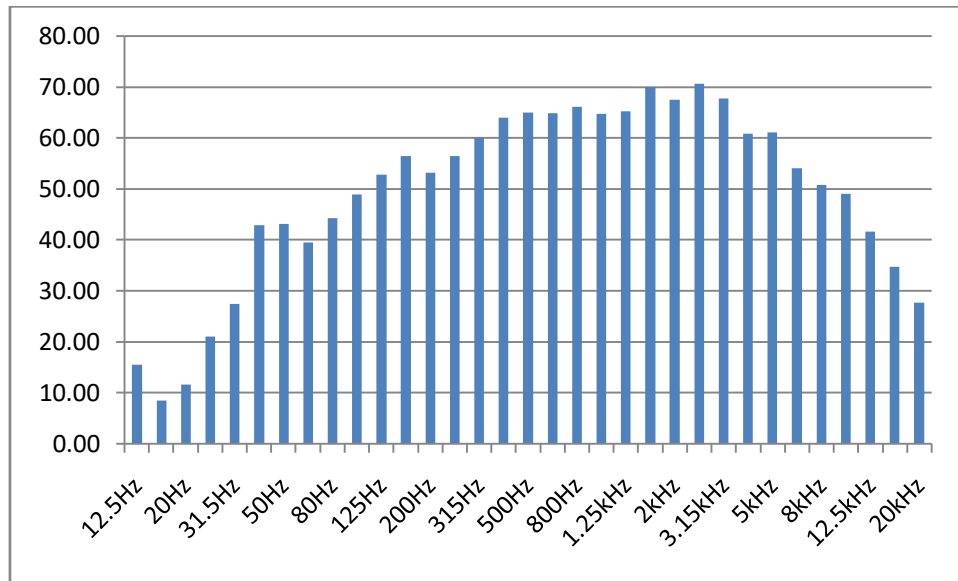


Figure 23: One-third octave frequency band at Location 1

Location 1

An examination of Fig. 23 above shows no evidence of tonal noise.

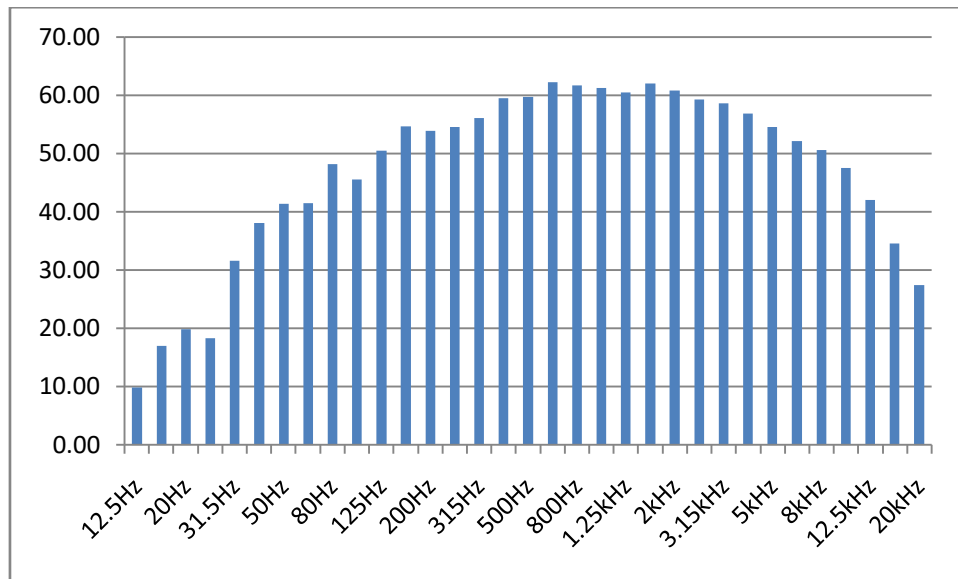


Figure 24: One-third octave frequency band at Location 2.

Location 2

An examination of Fig. 24 above shows no evidence of tonal noise.

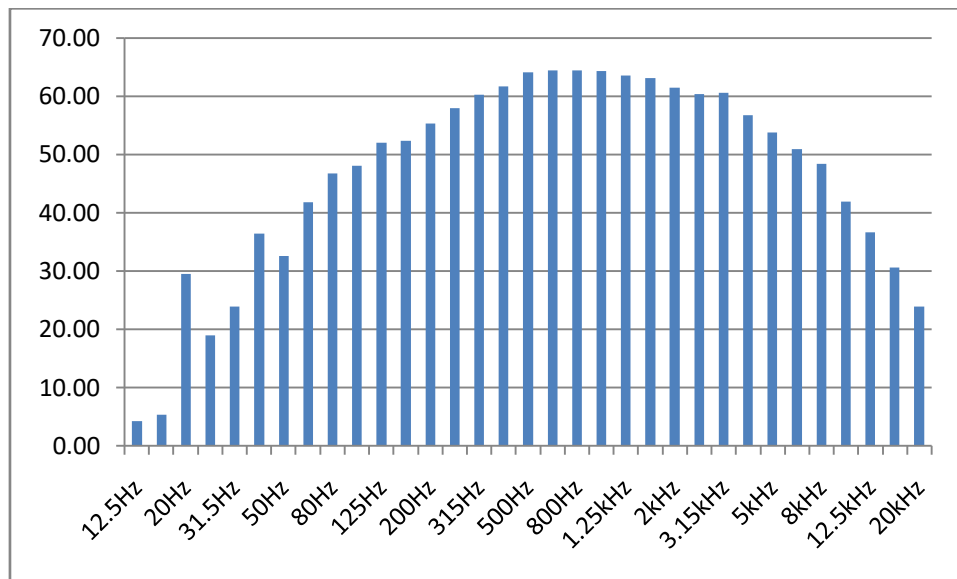


Figure 25: One-third octave frequency band at Location 3

Location 3

An examination of Fig. 25 above shows a protruding band at 3rd position counting from the left and this corresponds to the 20 Hz one-third octave band. Referring to Table 2, we subtract the noise level values (at 20 Hz) from its immediate adjacent bands right and left to see if it meets the criteria of being a 'tone'.

At 20 Hz,

$$29.50 - 19.01 = 10.49 \text{ dB} < 15 \text{ dB}$$

$$29.50 - 5.35 = 24.15 \text{ dB} > 15 \text{ dB}$$

Hence, there is no tonal noise.

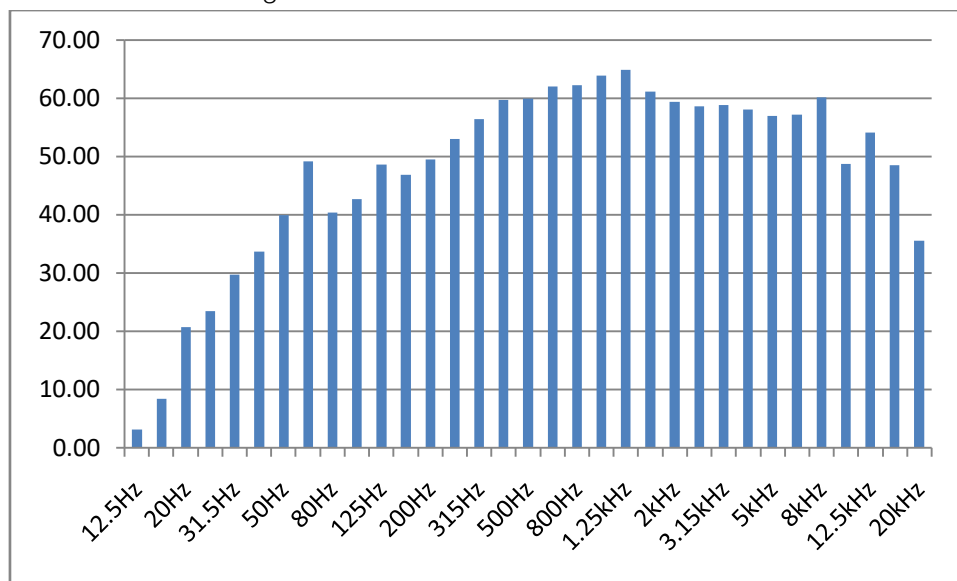


Figure 26: One-third octave frequency band at Location 4

Location 4

An examination of Fig. 26 above shows a protruding band at 8th position counting from the left and this corresponds to the 63 Hz one-third octave band. Referring to Table 2, we subtract the noise level values (at 63 Hz) from its immediate adjacent bands right and left to see if it meets the criteria of being a 'tone'.

At 63 Hz,

$$49.16 - 40.36 = 8.8 \text{ dB} < 15 \text{ dB}$$

$$49.16 - 39.91 = 9.25 \text{ dB} < 15 \text{ dB}$$

Hence, there is no tonal noise.

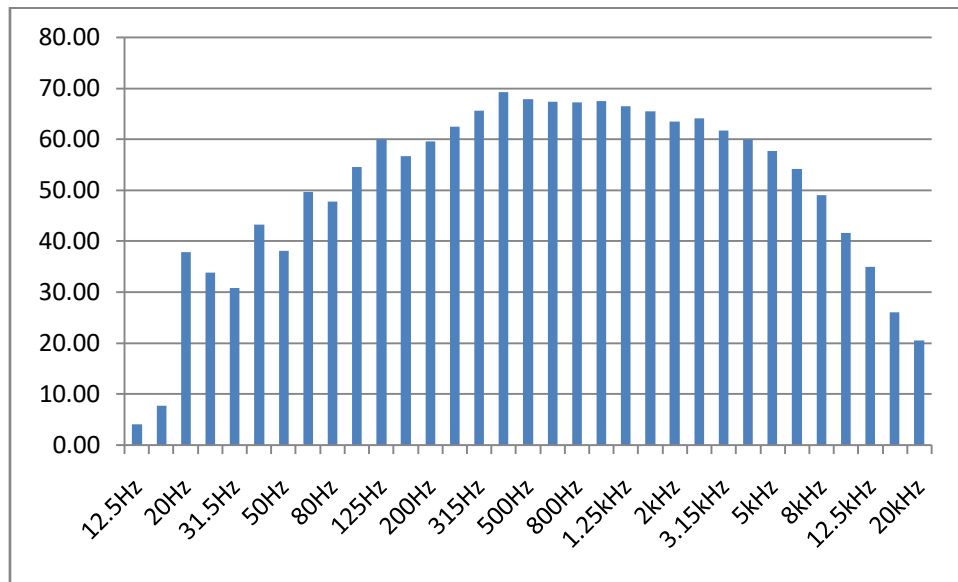


Figure 27: One-third octave frequency band at Location 5

Location 5

An examination of Fig. 27 above shows no evidence of tonal noise.

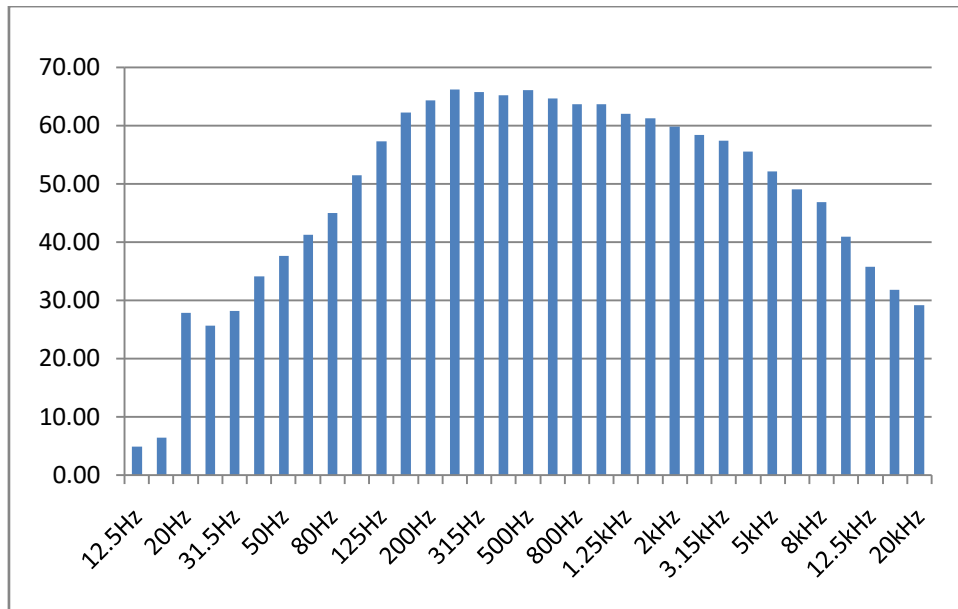


Figure 28: One-third octave frequency band at Location 6

Location 6

An examination of Fig. 28 above shows no evidence of tonal noise.

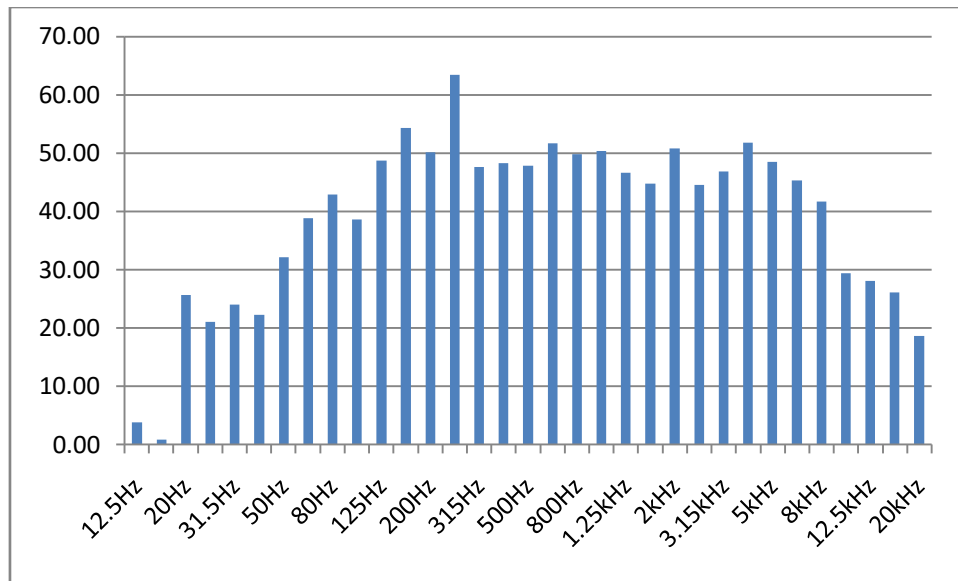


Figure 29: One-third octave frequency band at Location 7

Location 7

An examination of Fig. 29 above shows a protruding band at 14th position counting from the left and this corresponds to the 250 Hz one-third octave band. Referring to Table 2, we subtract the noise level values (at 250 Hz) from its immediate adjacent bands

right and left to see if it meets the criteria of being a 'tone'.

At 250 Hz,

$$63.43 - 47.64 = 15.79 \text{ dB} > 8 \text{ dB}$$

$$63.43 - 50.14 = 13.29 \text{ dB} > 8 \text{ dB}$$

Hence, there is tonal noise at 250 Hz

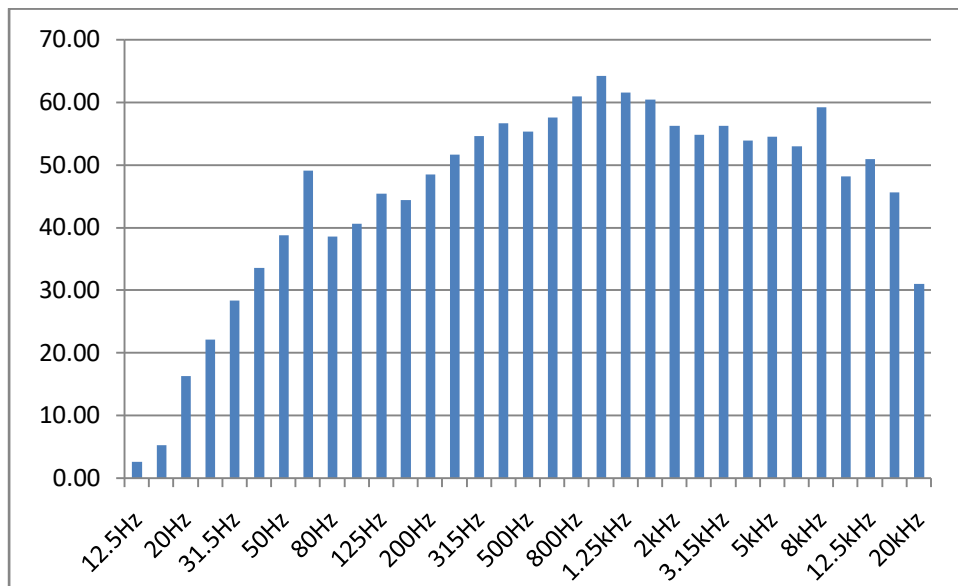


Figure 30: One-third octave frequency band at Location 8

Location 8

An examination of Fig. 30 above shows a protruding band at 8th position counting from the left and this corresponds to the 63 Hz one-third octave band. Referring to Table 2, we subtract the noise level values (at 63 Hz) from its immediate adjacent bands right and left to see if it meets the criteria of being a 'tone'.

At 63 Hz,

$$49.07 - 38.59 = 10.48 \text{ dB} < 15 \text{ dB}$$

$$49.07 - 38.78 = 10.29 \text{ dB} < 15 \text{ dB}$$

Hence, there is no tonal noise.

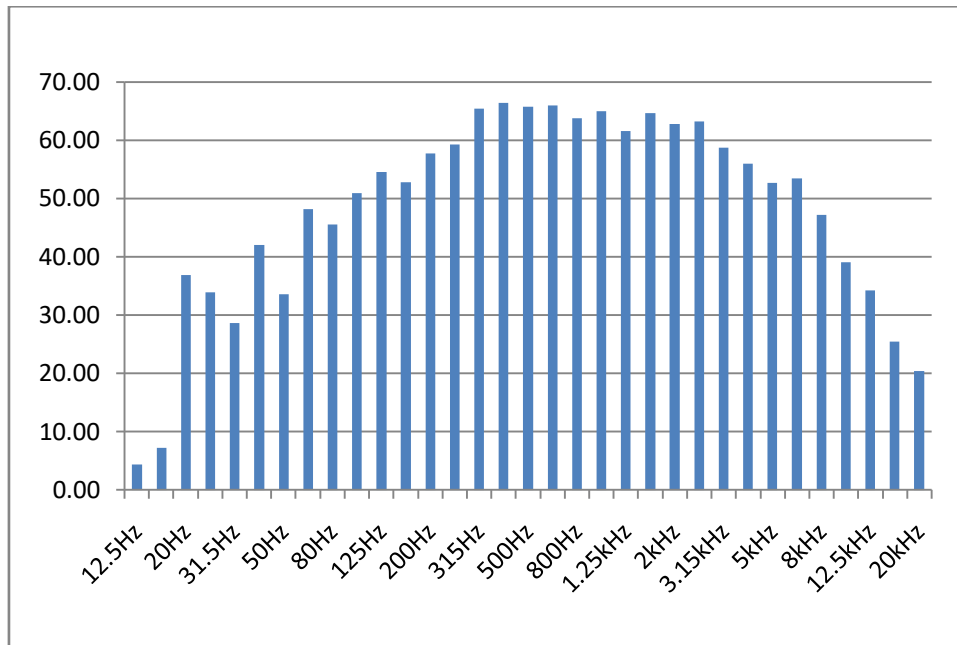


Figure 30: One-third octave frequency band at Location 9

Location 9

An examination of Fig. 30 above shows a protruding band at 6th position counting from the left and this corresponds to the 40 Hz one-third octave band. Referring to Table 2, we subtract the noise level values (at 63 Hz) from its immediate adjacent bands right and left to see if it meets the criteria of being a 'tone'.

At 40 Hz,

$$41.99 - 33.59 = 8.4 \text{ dB} < 15 \text{ dB}$$

$$41.99 - 28.63 = 13.36 \text{ dB} < 15 \text{ dB}$$

Hence, there is no tonal noise.

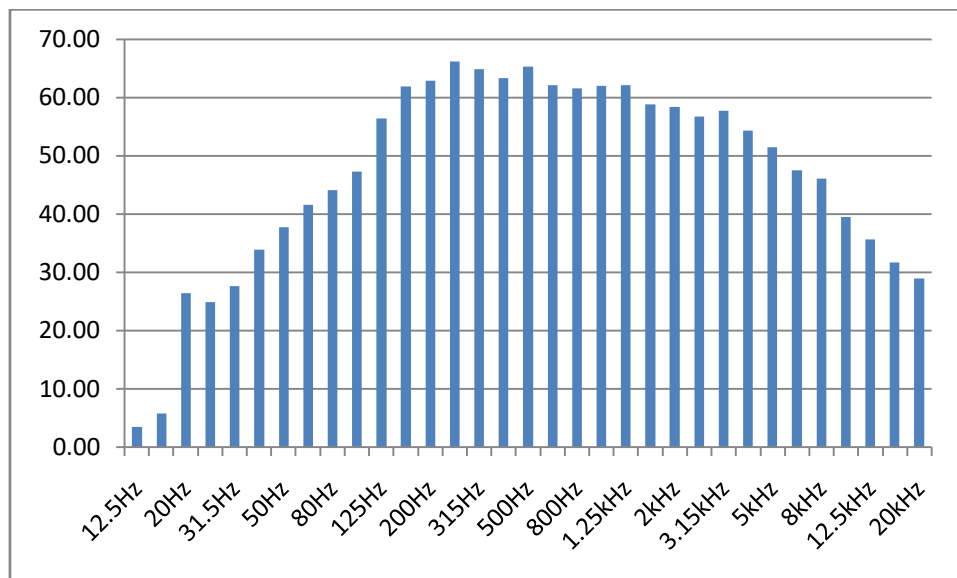


Figure 31: One-third octave frequency band at Location 10

Location 10

An examination of Fig. 31 above shows no evidence of tonal noise.

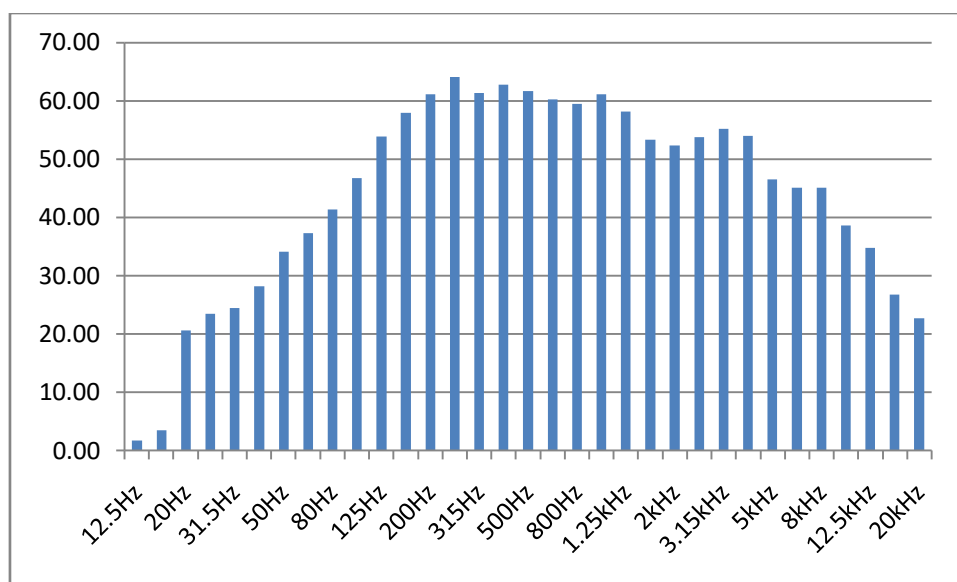


Figure 32: One-third octave frequency band at Location 11

Location 11

An examination of Fig. 32 above shows no evidence of tonal noise.

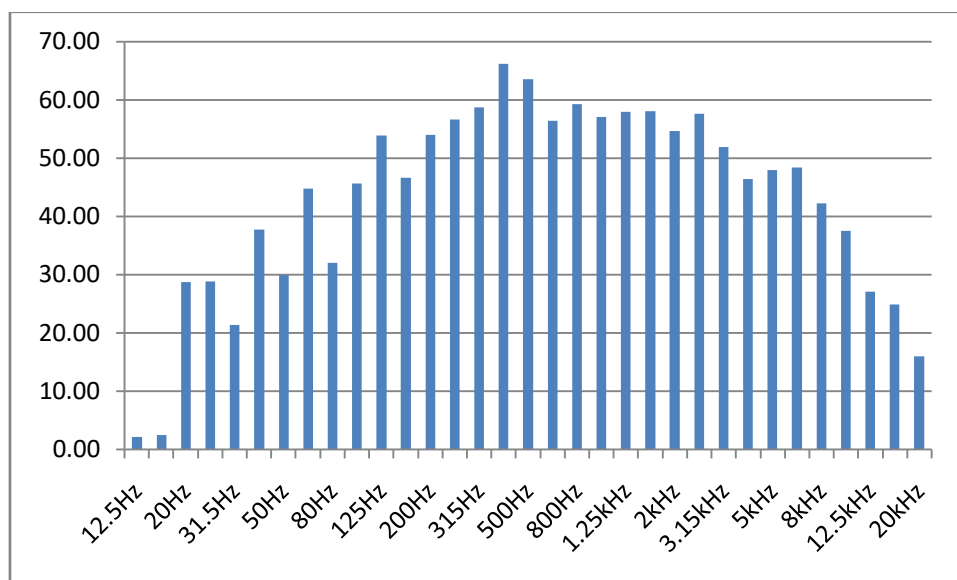


Figure 33: One-third octave frequency band at Location 12

Location 12

An examination of Fig. 33 above shows protruding bands at the 8th and 11th positions counting from the left and this corresponds to the 63 Hz and 125 Hz one-third octave bands respectively. Referring to Table 2, we subtract the noise level values (at 63 Hz and 125 Hz) from their immediate adjacent bands right and left to see if they meet the criteria of being 'tones'.

At 63 Hz,

$$44.77 - 32.04 = 12.73 \text{ dB} < 15 \text{ dB}$$

$$44.77 - 29.99 = 14.78 \text{ dB} < 15 \text{ dB}$$

At 125 Hz,

$$53.87 - 46.59 = 7.28 \text{ dB} < 15 \text{ dB}$$

$$53.87 - 45.69 = 8.18 \text{ dB} < 15 \text{ dB}$$

Hence, there is no tonal noise.

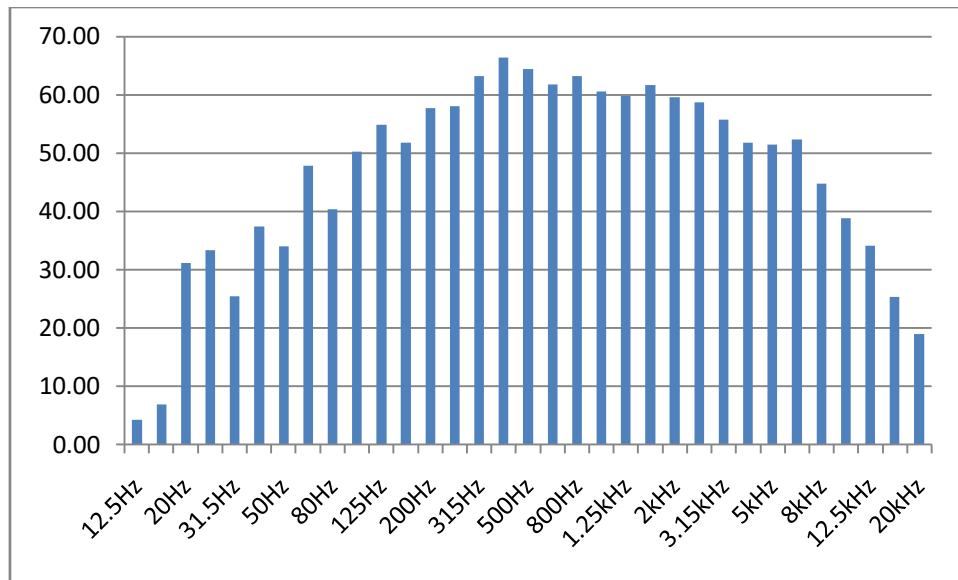


Figure 34: One-third octave frequency band at Location 13

Location 13

An examination of Fig. 34 above shows no evidence of tonal noise.

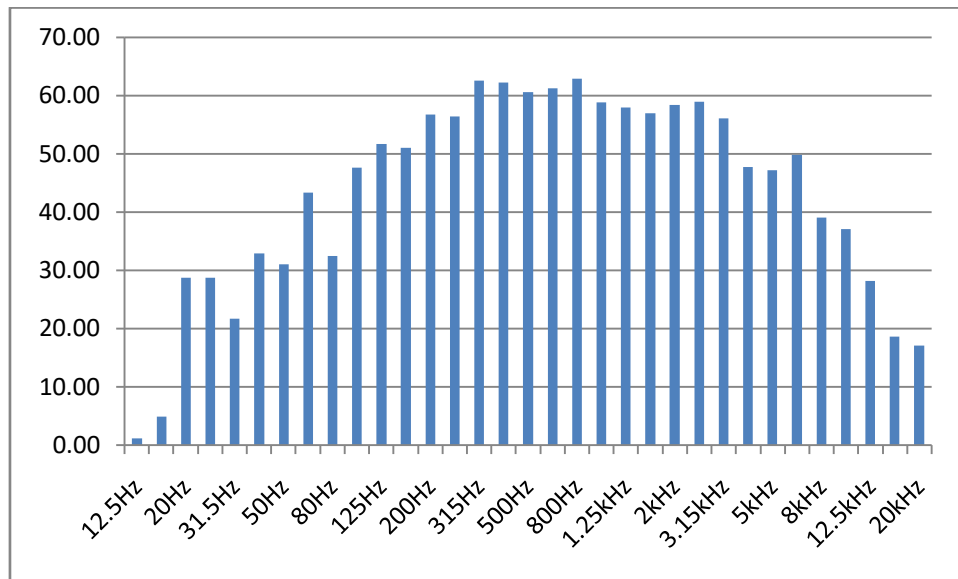


Figure 35: One-third octave frequency band at Location 14

Location 14

An examination of Fig. 35 above shows a protruding band at 8th position counting from the left and this corresponds to the 63 Hz one-third octave band. Referring to Table 2, we subtract the noise level values (at 63 Hz) from its immediate adjacent bands right and left to see if it meets the criteria of being a 'tone'.

At 63 Hz,

$$43.29 - 32.44 = 10.85 \text{ dB} < 15 \text{ dB}$$

$$43.29 - 31.08 = 12.21 \text{ dB} < 15 \text{ dB}$$

Hence, there is no tonal noise.

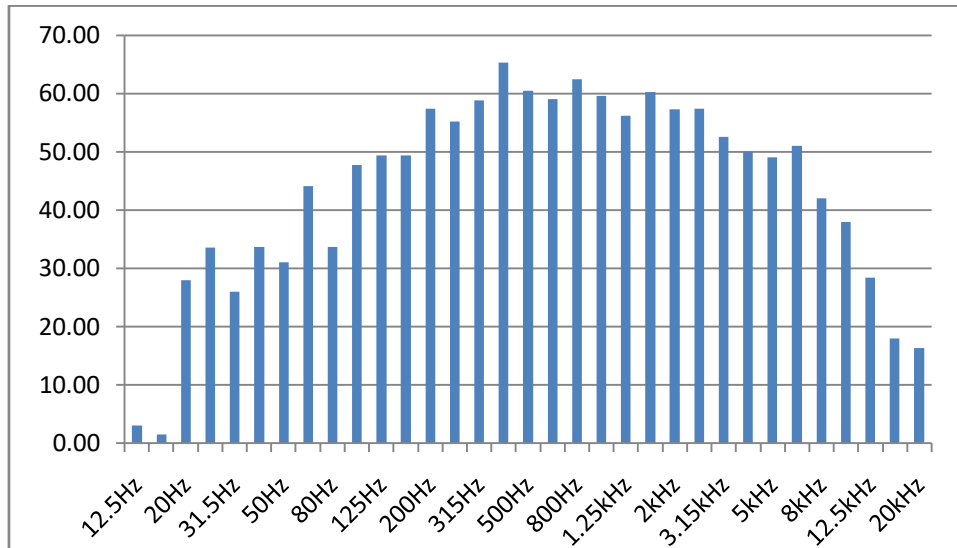


Figure 36: One-third octave frequency band at Location 15

Location 15

An examination of Fig. 36 above shows protruding bands at the 8th and 16th positions counting from the left and this corresponds to the 63 Hz and 400 Hz one-third octave bands respectively. Referring to Table 2, we subtract the noise level values (at 63 Hz and 400 Hz) from their immediate adjacent bands right and left to see if they meet the criteria of being 'tones'.

At 63 Hz,

$$44.09 - 33.69 = 10.40 \text{ dB} < 15 \text{ dB}$$

$$44.09 - 31.04 = 13.05 \text{ dB} < 15 \text{ dB}$$

At 400 Hz,

$$65.28 - 60.45 = 4.83 \text{ dB} < 8 \text{ dB}$$

$$65.28 - 58.82 = 6.46 \text{ dB} < 8 \text{ dB}$$

Hence, there is no tonal noise.

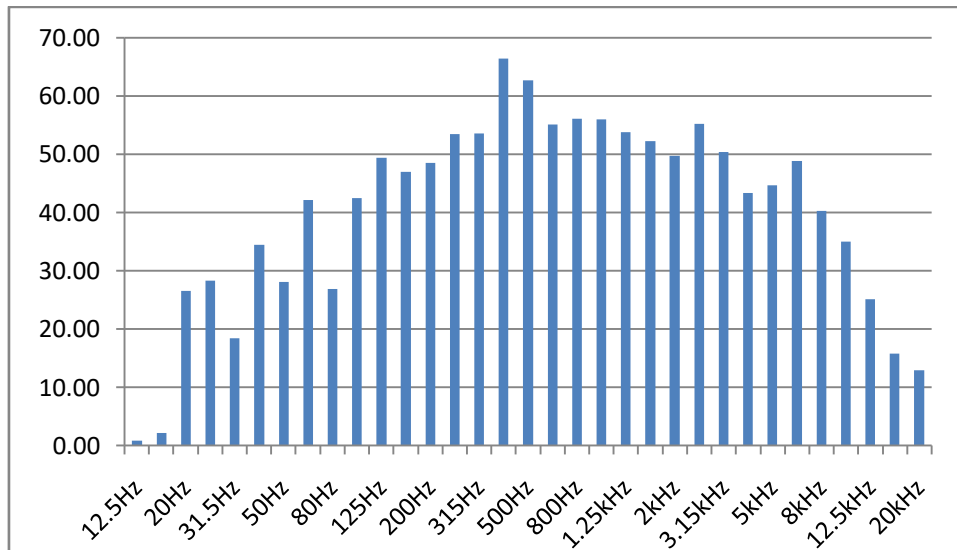


Figure 37: One-third octave frequency band at Location 16

Location 16

An examination of Fig. 37 above shows protruding bands at the 8th, 24th and 28th positions counting from the left and this corresponds to the 63 Hz, 2.5 kHz and 6.3 kHz one-third octave bands respectively. Referring to Table 2, we subtract the noise level values (at 63 Hz, 2.5 kHz and 6.3 kHz) from their immediate adjacent bands right and left to see if they meet the criteria of being 'tones'.

At 63 Hz,

$$42.18 - 26.87 = 15.31 \text{ dB} > 15 \text{ dB}$$

$$42.18 - 28.09 = 14.09 \text{ dB} < 15 \text{ dB}$$

At 2.5 kHz,

$$55.17 - 50.41 = 4.76 \text{ dB} < 6 \text{ dB}$$

$$55.17 - 49.72 = 5.45 \text{ dB} < 6 \text{ dB}$$

At 6.3 kHz,

$$48.87 - 40.30 = 8.57 \text{ dB} < 6 \text{ dB}$$

$$48.87 - 44.69 = 4.18 \text{ dB} < 6 \text{ dB}$$

Hence, there is no tonal noise.

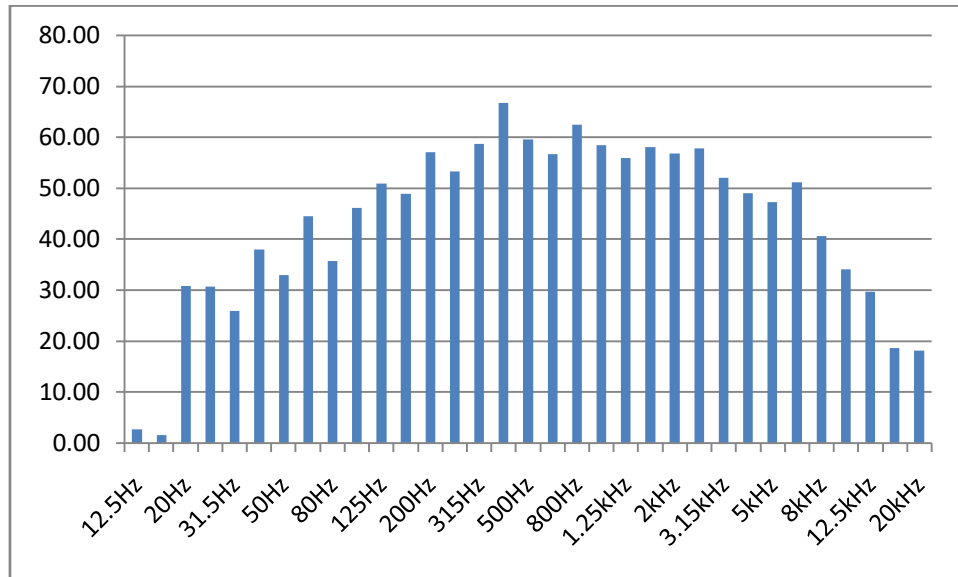


Figure 38: One-third octave frequency band at Location 17

Location 17

An examination of Fig. 38 above shows protruding bands at the 8th, 16th, 19th, and 28th positions counting from the left and this corresponds to the 63 Hz, 400 Hz, 800 Hz, and 6.3 kHz one-third octave bands respectively. Referring to Table 2, we subtract the noise level values (at 63 Hz, 400 Hz, 800 Hz, and 6.3 kHz) from their immediate adjacent bands right and left to see if they meet the criteria of being 'tones'.

At 63 Hz,

$$44.51 - 35.77 = 8.74 \text{ dB} < 15 \text{ dB}$$

Hence, there is no tonal noise.

$$44.51 - 32.99 = 11.52 \text{ dB} < 15 \text{ dB}$$

At 400 Hz,

$$66.75 - 59.62 = 7.13 \text{ dB} < 8 \text{ dB}$$

$$66.75 - 58.73 = 8.02 \text{ dB} > 8 \text{ dB}$$

At 800 Hz,

$$62.39 - 58.38 = 4.01 \text{ dB} < 6 \text{ dB}$$

$$62.39 - 56.72 = 5.67 \text{ dB} < 6 \text{ dB}$$

At 6.3 kHz,

$$51.16 - 40.62 = 10.54 \text{ dB} > 6 \text{ dB}$$

$$51.16 - 47.26 = 3.90 \text{ dB} < 6 \text{ dB}$$

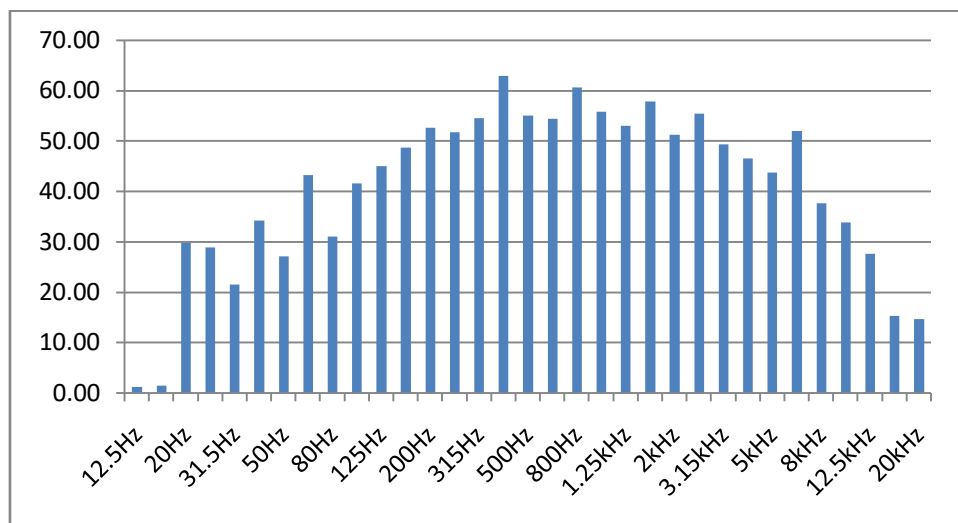


Figure 39: One-third octave frequency band at Location 18

Location 18

An examination of Fig. 39 above shows protruding bands at the 6th, 8th, 16th, and 28th positions counting from the left and this corresponds to the 40 Hz, 63 Hz, 400 Hz, and 6.3 kHz one-third octave bands respectively. Referring to Table 2, we subtract the noise level values (at 40 Hz, 63 Hz, 400 Hz, and 6.3 kHz) from their immediate adjacent bands right and left to see if they meet the criteria of being 'tones'.

At 40 Hz,

$$34.25 - 27.18 = 7.07 \text{ dB} < 15 \text{ dB}$$

$$34.25 - 21.51 = 12.74 \text{ dB} < 15 \text{ dB}$$

At 63 Hz,

$$43.21 - 31.08 = 12.13 \text{ dB} < 15 \text{ dB}$$

$$43.21 - 27.18 = 16.03 \text{ dB} > 15 \text{ dB}$$

At 400 Hz,

$$62.85 - 54.99 = 7.86 \text{ dB} < 8 \text{ dB}$$

$$62.85 - 54.58 = 8.27 \text{ dB} > 8 \text{ dB}$$

At 6.3 kHz,

$$52.02 - 37.68 = 14.34 \text{ dB} > 6 \text{ dB}$$

$$52.02 - 43.74 = 8.28 \text{ dB} > 6 \text{ dB}$$

Hence, there is tonal noise at 6.3 kHz

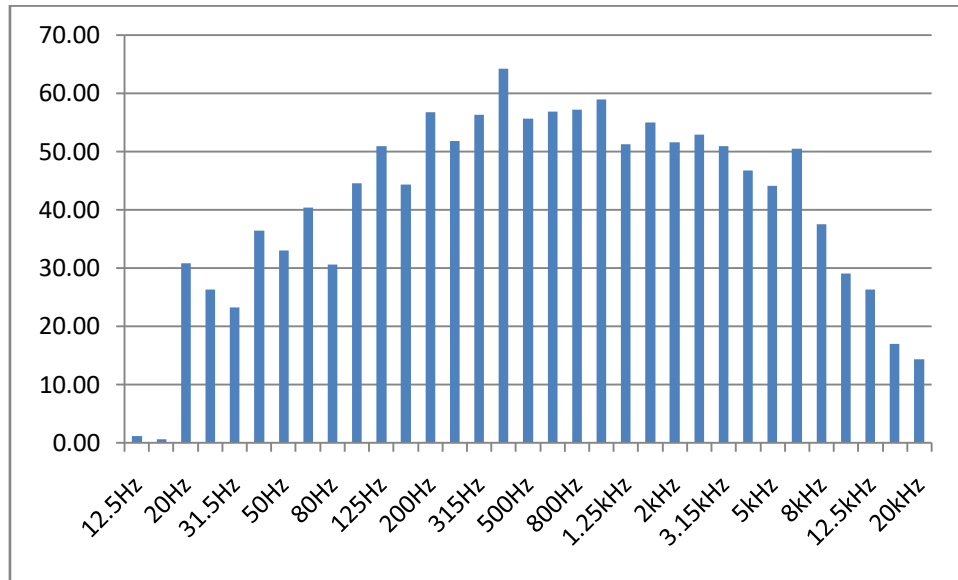


Figure 40: One-third octave frequency band at Location 19

Location 19

An examination of Fig. 40 above shows protruding bands at the 8th, 11th, 13th, 16th, and 28th positions counting from the left and this corresponds to the 63 Hz, 125 Hz, 200 Hz, 400 Hz and 6.3 kHz one-third octave bands respectively. Referring to Table 2, we subtract the noise level values (at 63 Hz, 125 Hz, 200 Hz, 400 Hz and 6.3 kHz) from their immediate adjacent bands right and left to see if they meet the criteria of being 'tones'.

At 63 Hz,

$$40.38 - 30.62 = 9.76 \text{ dB} < 15 \text{ dB}$$

$$40.38 - 33.03 = 7.35 \text{ dB} < 15 \text{ dB}$$

At 125 Hz,

$$50.91 - 44.32 = 6.59 \text{ dB} < 15 \text{ dB}$$

$$50.91 - 44.55 = 6.36 \text{ dB} < 15 \text{ dB}$$

At 200 Hz,

$$56.76 - 51.81 = 4.95 \text{ dB} < 8 \text{ dB}$$

$$56.76 - 44.32 = 12.44 \text{ dB} > 8 \text{ dB}$$

At 400 Hz,

$$64.15 - 55.58 = 8.57 \text{ dB} > 8 \text{ dB}$$

$$64.15 - 56.30 = 7.85 \text{ dB} < 8 \text{ dB}$$

At 6.3 kHz,

$$50.51 - 37.56 = 12.95 \text{ dB} > 6 \text{ dB}$$

$$50.51 - 44.07 = 6.44 \text{ dB} > 6 \text{ dB}$$

Hence, there is tonal noise at 6.3 kHz

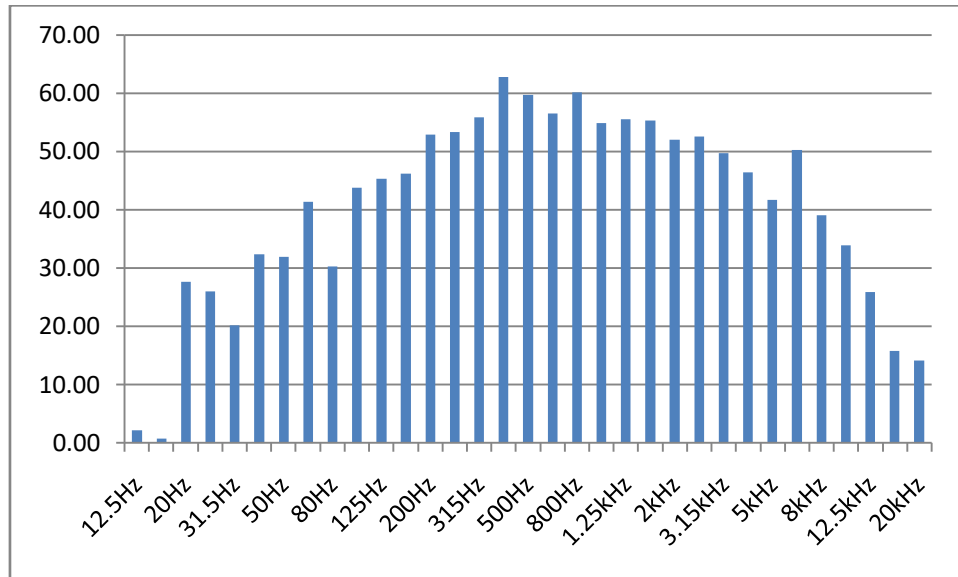


Figure 41: One-third octave frequency band at Location 20

Location 20

An examination of Fig. 41 above shows protruding bands at the 8th and 28th positions counting from the left and this corresponds to the 63 Hz and 6.3 kHz one-third octave bands respectively. Referring to Table 2, we subtract the noise level values (at 63 Hz and 6.3 kHz) from their immediate adjacent bands right and left to see if they meet the criteria of being 'tones'.

At 63 Hz,

$$41.32 - 30.31 = 11.01 \text{ dB} < 15 \text{ dB}$$

$$41.32 - 31.96 = 9.36 \text{ dB} < 15 \text{ dB}$$

At 6.3 kHz,

$$50.24 - 39.04 = 11.20 \text{ dB} > 6 \text{ dB}$$

$$50.24 - 41.68 = 8.56 \text{ dB} > 6 \text{ dB}$$

Hence, there is tonal noise at 6.3 kHz

VI. CONCLUSION AND RECOMMENDATIONS

A one-third octave band frequency analysis was conducted at each noise measurement locations in order to assess any tonal component associated with helicopter flyover activity. Analysis of the one-third octave band frequency spectra measured at each of the noise monitoring locations from 7 am to 5 pm are presented in Tables 23-41. The frequency spectra showed that the helicopter noise contains tonal noise at locations 7 (at 400 Hz), 18 (at 6.3 kHz), 19 (at 6.3 kHz), and 20 (at 6.3 kHz)

From an examination of the one-third octave band frequency spectra, it is noted that spectra measured at all locations are generally broadband except for locations 7, 18, 19, and 20 which have pure tones in line with the ISO 1996-2 criteria. Tonal noise was mostly observed at the high frequency range at 6.3 kHz.

It can therefore be concluded that there is significant tonal content associated with helicopter flyover noise at locations 7, 18, 19, and 20 and therefore residents in these locations will experience higher level of annoyance and daytime sleep disturbance associated with tonal noise.

The results of the study clearly indicate that helicopter flyover noise generates tonal noise across a section of Mgbuoshimini community and this could produce increased annoyance and day-time sleep disturbance.

It is also clear from the results of this study that heliport is sited too close to the community and is operating outside the limits set out in ISO 1996-2:2007.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

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Knowledge, Attitude, Risk and Fear Assessment of Health Professionals Towards Covid-19 in Perspective of Workplace, Local and National Policy

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Abstract- Background: Health professionals, the frontline fighters, are under high risk of being infected with a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV- 2). Many health workers in the world, including Nepal, have lost their lives in fighting with COVID-19. Thus, we assessed the knowledge, attitude, risk, and fear among health professionals towards COVID-19 and evaluated their satisfaction with local and governmental policies of Nepal.

Methods: A self-administered questionnaire-based descriptive cross-sectional study included 150 (male-44% and female-56%) health professionals with mean age 26.14 ± 6.092 years working at Chitwan Medical College, Nepal. The questionnaire included 40 statements having four categories to assess 1) the participant's knowledge about COVID-19, 2) the risk and attitude, 3) their fears, and 4) stake holder's role in encouraging health professionals to allay their fears and avert negative attitudes.

Keywords: COVID-19, health professionals, knowledge, risks, fear, encouragement.

GJMR-F Classification: NLMC Code: W 84



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Ram Lochan Yadav ^α, Laxmi Kumari Yadav ^ο, Rosan Churasia ^ρ & Md. Nazrul Islam ^ω

Abstract- Background: Health professionals, the frontline fighters, are under high risk of being infected with a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Many health workers in the world, including Nepal, have lost their lives in fighting with COVID-19. Thus, we assessed the knowledge, attitude, risk, and fear among health professionals towards COVID-19 and evaluated their satisfaction with local and governmental policies of Nepal.

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Results: All the participants (100%) mentioned COVID-19, a viral disease that started from China transmitted rapidly through aerosols. SARS COV-2 has an incubation period of up to 14 days (117, 78%), and diagnosis (78.7%) requires a lab test. Over 56 % rated that death is not imminent after infection. They agreed (98%) with its flue like clinical presentations. The majority of them (88%) were afraid of working in a hospital due to an unsafe working place (65%). They (92%) strongly pointed out the failure of the national and local policy to uplift the social security and to expand adequate testing centers (92.7%). More than 65% indicated a lack of training and 70% were unaware of any stimulus package.

Conclusion: Health professionals bear adequate knowledge of COVID-19. However, the inadequate hospital work safety, poor infection control, lack of standard local and governmental strategies to empower financial, social, and health security to health care providers, most of them have lost their motivation to go to work in the hospital. The standard policies needed to

provide intensive training and boost them emotionally and socially for better crisis management and avert their negative attitudes.

Keywords: COVID-19, health professionals, knowledge, risks, fear, encouragement.

1. INTRODUCTION

The coronavirus pandemic, also known as COVID-19 Pandemic, is a viral disease rapidly spreading throughout the globe caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) previously named as 2019-n Cov1. The disease was first reported in December 2019 in Wuhan, the capital city of Hubei Province in central China. The disease within a very short time crossed the geographical boundaries across the world with a doubling of epidemic size every week in geometric progression. By the 15th of September 2020, more than 29.1 million cases and 922252 confirmed deaths have been reported across 216 countries and territories ². The western countries are the most affected, with over 50% of cases and 60% of deaths reported in the Europe region ³.

On 23rd January 2020, Nepal confirmed the first COVID case in a 31-year-old student who had arrived in Kathmandu on 9 January from Wuhan, China. This was also claimed to be the first reported case in South Asia. The number of cases has tremendously increased in Nepal, and by 15 September 2020, the Ministry of Health and Population (MoHP) has confirmed a total of 55,329 cases and 360 deaths in the country⁴. The cases are still increasing in Nepal.

The common symptoms of COVID-19 are flu-like features, including fever, dry cough, fatigue, breathing difficulties, and hyposmia or anosmia. Pneumonia and acute respiratory distress syndrome are seen among the complicated cases. The old age and patients with pre-existing medical conditions, including diabetes, hypertension, cancer, heart, lung, and renal diseases, have been noticed as potential risk factors for severe disease and mortality. However, complicated cases are not uncommon in children adults⁵⁻⁶.

The rapid spread of SARS-CoV-2 is due to human-to-human transmission and indirect contact with

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contaminated objects. It is transmitted through body fluid aerosols from the mouth or nose of the infected person during coughs, sneezes, and talks. SARS-CoV-2 remains intact and contagious in droplets suspended in the air for up to three hours and when it settles on objects, remain there for hours to days. Such contaminated objects, when touched and made contact with eyes, nose, or mouth, an individual can become infected⁷.

The incubation period ranges from 2 to 14 days, but often the symptoms appear on around five days. The standard diagnosis of COVID-19 is typically made by Reverse transcription-polymerase chain reaction-based SARS-CoV-2 RNA detection testing of a nasopharyngeal swab. Based on the clinical presentation, the COVID-19 patients classified as Asymptomatic- COVID nucleic acid test positive. Without any clinical symptoms and signs and the chest imaging is normal; Mild- Symptoms of acute upper respiratory tract infection (fever, fatigue, myalgia, cough, sore throat, runny nose, sneezing) or digestive symptoms (nausea, vomiting, abdominal pain, diarrhea); Moderate- Pneumonia (frequent fever, cough) with no obvious hypoxemia, chest CT with lesions; Severe- Pneumonia with hypoxemia ($SpO_2 < 92\%$); and Critical- Acute respiratory distress syndrome (ARDS), may have a shock, encephalopathy, myocardial injury, heart failure, coagulation dysfunction, and acute kidney injury⁸⁻⁹.

Structurally, SARS-CoV-2 is a single-stranded RNA virus, positive-sense, enveloped, with a diameter of 60 nm to 140 nm and unique spikes with sizes 9 nm to 12 nm, giving the appearance of a solar corona¹⁰.

Its pathophysiology includes a distinctive life cycle and host response. Life-cycle begins with the binding of the viruses to host receptors (attachment). Then through endocytosis or membrane fusion, they enter host cells (penetration). The viral RNA utilizes the nucleus of the host for replication so that viral mRNA is used to make viral proteins (biosynthesis). Finally, the new viral particles are made (maturation) and released. SARS-CoV-2 binds to the angiotensin-converting enzyme 2 (ACE2) receptor of the target cells (nasal and bronchial epithelial cells and pneumocytes) through the viral structural spike (S) protein. The transmembrane serine protease type 2 (TMPRSS2) of the host cell facilitates viral uptake by cleaving ACE2 and activating the SARS-CoV-2 S protein, which mediates coronavirus entry into host cells¹¹. The host Target cells, especially alveolar epithelial type II, express both ACE2 and TMPRSS2.¹²

SARS-CoV-2 infects and kills T-cells, impairs lymphopoiesis, and enhances lymphocyte apoptosis, causing marked lymphopenia, coupled with the viral inflammatory response debilitating both the innate and the acquired immune response. Finally, the viral load rises by accelerated replication and spread to pulmonary capillary endothelial cells by endothelial

barrier disruption, accentuating the inflammatory response, and triggering an influx of monocytes and neutrophils. Due to the infiltration of monocytes and neutrophils and intense viral inflammatory host response along with the Bradykinin-dependent lung angioedema, the interstitial edema develops. This is responsible for acute respiratory distress syndrome (ARDS) in early-phase¹³.

The monocyte infiltration, along with edema, appears as characteristic ground-glass opacities on computed tomographic imaging of the chest. The edema, along with the disrupted endothelial barrier, leads to difficult alveolar-capillary oxygen transmission and severely reduced oxygen diffusion capacity across the respiratory membrane. This causes an acute fall in $SPO_2\%$, a characteristic feature of COVID-19. The endothelial damage, along with intense inflammation of lung tissues and surroundings, is responsible for high activation of platelets starting massive coagulation, consumption of clotting factors, intravascular coagulation, micro thrombi formation with its complications like limb ischemia, ischemic stroke, myocardial infarction, renal and multi-organ failures in severe COVID-19 cases¹⁴.

To date, the specific vaccine with safety and efficacy against SARS-CoV-2 has not been developed through many scientists in the world working day and night on it. Moreover, there is no known specific antiviral drug, so the primary treatment is still symptomatic only ¹⁵.

Nepal has implemented preventive guidelines recommended by WHO to protect human to human transmission of COVID-19 included social distancing, ban on public gathering including religious gatherings, regular personal hygiene with soap hand washing and use of hand sanitizers; use of face masks, respiratory hygiene to cover the mouth and nose while sneezing or coughing, one or two passengers per seat in public vehicles, temporary closing of public places, cities, schools, and colleges¹⁶.

However, the success of these measures was variable and largely affected by socio-economic factors and knowledge and attitude of the people in different areas of the nation.

Although every sector closed temporarily, the closing of health sectors could be very unnatural and impossible. Health care workers have to work day and night in hospitals without any break. Moreover, the hospital zone falls in the red zone for the transmission of COVID-19. Healthcare workers stand at the frontlines to investigate and manage COVID-19 patients, and they are at high risk of being infected with Coronavirus. They are already stressed due to fear of pathogen exposure, long working hours, psychological distress, and fatigue, and sometimes with occupational burnout and stigma, and physical violence. At the same time, the health workers of Nepal have to work with very minimum

facilities and insufficient personal protection equipment and without health and wealth insurance, especially in private health sectors, which occupy more than 70 percent of health services in Nepal. Therefore, health workers, especially in developing countries like Nepal, are more in distress from all aspects, including health, wealth, and social insecurity. The health workers should know about COVID-19 with a positive attitude and very safe practice from hospital to home. Many studies have been reported regarding knowledge, attitude, and practice of health workers towards COVID-19 but a limited number of them mentioned the background conditions where the health workers work with poor health facilities, low socio-economic, social stigma, and neglect and without health wealth and social security like in Nepal. They are bankrupt not only financially but socially and emotionally. With this background, it is important to assess the knowledge, attitude, risk, and fear among health professionals towards COVID-19 and to evaluate their satisfaction at local and governmental policies made to promote positive preventive and therapeutic practices and to avert negative attitudes.

II. METHODS

A questionnaire-based descriptive cross-sectional study was conducted among health professionals working at Chitwan Medical College, a tertiary care teaching hospital in Mid-Nepal. A convenience non-probability sampling technique was used to select the participants to collect the data ensuring their confidentiality precautions. A self-administered questionnaire that could investigate the objectives of the study in our setup and population were adapted after reviewing methodologies of some relevant published researches^{17–19} and COVID-19 websites of WHO, Ministry of Health and Population (MOHP), Nepal and COVID-19 facts web page of Chit wan Medical College.

The items in the questionnaire were checked and validated for content and relevance of the study. Further, the pilot study was done on 20 participants to intend the validity of items in the questionnaire. The Cronbach's alpha reliability test, revealed a value of 0.8 ($\chi^2=1762.5$, $p=0.001$), was applied to measure the internal consistency of all items in the questionnaire.

Excluding the participants' sociodemographic variables such as age, gender, and occupation, the questionnaire included a total of 40 statements or items displayed into four categories: the category 1 assessed the participant's knowledge about COVID-19 in the pandemic era, including its clinical presentation, mode of transmission, prevention and treatment outcome. Category 2 measured the risk perception and attitude of participants. Category 3 assessed the fears of healthcare workers at working place, and category 4 brought attention to stakeholders about how to

encourage healthcare workers to allay their fears and promote positive preventive and therapeutic practices. The participants were asked to address their responses to each statement using a combination of YES-NO and Likert scale rating kept at the end of every statement.

In the partial lockdown condition, the data from the participants collected both by direct distribution of questionnaire on printed papers with maintaining social distancing and online distribution of the questionnaire through Google form, whichever was convenient and feasible. The link for the online version of the questionnaire was sent to participants via email and what apps. Google form questionnaire was assessable by participants going through the provided link but only at once to prevent the duplication of the data by the same participant. The remaining participants filled the questionnaire distributed in paper form following one on one method with proper precaution and using mask and hand sanitizer. The completed form was collected immediately. All the participants of the study were health Professionals from CMC, including doctors, nurses, and medical laboratory staff. The purpose of the study was informed well to all participants.

All the participants were assured of the confidentiality of their information stating that data would be used for research purposes only. This was voluntary participation, and informed written consent was taken from all participants before filling the questionnaire. The participants' responses from the online version were retrieved and saved in Microsoft Excell. The data from paper responses were also entered into the same file. After that, the collected data were processed on SPSS version 21, Armonk, Newyork, the USA, for the data analysis using descriptive statistics.

The research approval of this study was obtained from the Institutional Review Committee of Chitwan Medical College (CMC-IRC), Nepal.

III. RESULT

This study included 150 (male-44% and female-56%) health professionals with a mean age of 26.14 ± 6.092 years working at CMCTH, Nepal. The health professionals participated in this study were medical officer/intern (36.7%), specialist/consultant (13.3%), nurses (40.7%), and laboratory staffs (9.3%) (Table 1). This questionnaire-based survey revealed that many health professionals (54.7%) acquire the information regarding the COVID-19 pandemic through online news and social media like WhatsApp, Facebook and the remaining 45.7% via combined sources including national and international news on TV, WHO and government health media (Ministry of Health and population, MOHP), Nepal (Table 2).

Table 1: Demographic characteristics of the participants (N=150)

Variables		Frequency (%)
Sex	Male	66 (44)
	Female	84 (56)
Qualification	Medical officer/intern	55 (36.7)
	Specialist/consultant	20 (13.3)
	Nurse	61 (40.7)
	Laboratory staff	14 (9.3)

Regarding the participant's knowledge about COVID-19, most health professionals were well aware of the COVID-19 pandemic, including its clinical presentation, mode of transmission, prevention, and treatment outcome (Tables 2a and 2b).

Table 2a: The participant's knowledge about COVID-19 in the pandemic era, including its clinical presentation, mode of transmission, prevention, and treatment outcome

S.N.	Variables (Statements of questionnaire)	Responses (N=150)		
		Yes n (%)	No n (%)	Not sure n (%)
1.	Source of information	82 (54.7)		
	1. Social media and online news (WhatsApp, Facebook) 2. Combined sources (TV news, WHO, MOHP, in urnalns etc.)	68(45.3)		
2.	Date of first confirmed COVID case in Nepal	92 (61.3)	58 (38.7)	-
3.	Total number of confirmed cases of COVID-19 by MOH, Nepal as at 15th Sept, 2020	89 (59.3)	22 (14.7)	39 (26.0)
4.	The age group mostly affected by COVID-19 in Nepal	137 (91.7)	-	13 (8.7)
5.	COVID- caused by virus	150 (100)	-	-
6.	Started from Wuhan City, China	150 (100)	-	-
7.	Incubation period is up to 2 wks.	117 (78)	-	33 (22)
8.	It is an aerosol infection	150 (100)	-	-
9.	Transmitted rapidly from human to human	150 (100)	-	-
10.	If infected death is sure	-	85 (56.7)	65 (43.3)
11.	Infection can be confirmed without laboratory test		118 (78.7)	32 (21.3)
12.	Treatment is possible		125(83.3%)	25 (16.7)

They all (150, 100%) mentioned that COVID-19 is a viral disease, originated from Wuhan city, China, transmitted rapidly through air droplets from one person to another person. The majority of the participants (117, 78%) reported the incubation period of SARS COV-2 up to 14 days, while 33 (22%) were unsure about the incubation period. A high proportion of participants (78.7%) reported that the confirmation of the disease requires the laboratory test, while 21.3% was not sure

about the confirmation. Interestingly, 56.7 % of participants said that death is not imminent after SARS COV-2 infection, and 43.3% was not sure about it. Moreover, most of them (83.3%) said 'NO' to the possibility of treatment, and 25 (16.7%) were not sure of its treatment. Over 59% of participants knew the total number of confirmed COVID-19 cases in Nepal on 15th September 2020, whereas 39 (26%) were unsure about the total case. Ninety-two (61.3%) participants knew the

date of the first confirmed COVID case in Nepal, and the remaining 58 (38.7%) didn't know the exact date of the first case in Nepalese. A very high proportion (91.7%)

knew the age group most affected by COVID-19 in Nepal, whereas 8.7 % was unsure.

Table 2b: The participant's knowledge about COVID-19 in the pandemic era, including its clinical presentation, mode of transmission, prevention, and treatment outcome

S. N.	Variables (Statements of questionnaire)	Responses (N=150)			
		Strongly agree n (%)	Agree n (%)	Not sure n (%)	Disagree e (%)
1.	Clinical presentation includes: Fever > 38°C, Dry cough, Difficulty in breathing, Fatigue, Nasal congestion, Nausea, Diarrhea, Sneezing, Mayalgia	114 (76)	36 (24)	-	-
2.	COVID spread is preventable	107 (71.3)	43 (28.7)		
3.	The following can reduce the spread of COVID-19. (Tick all that apply). a. The use of face masks b. Restriction of movement through lock down/stay at home c. Restriction of crowding through social distancing d. Environmental sanitation e. Regular hand washing with detergent f. Using hand sanitizer	150 (100)			
4.	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as bus parks and avoid taking public transportations.	139 (92.7)	11 (7.3)	-	-
5.	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	137 (91.7)	13 (8.7)	-	-
6.	Contact tracing and observation in isolation for 14 days is important step to prevent spread to public	131 (87.3)	19 (12.7)	-	-
7.	COVID-19 is treatable although mainly supportive?	132(88)	18 (12)		
8.	It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus.	-	-	-	150. 00)

All the health professionals participated in this study were well accepted (76% strongly agree and 24% agree) to the statement with the flue like the clinical presentation of COVID-19 including high Fever > 380C, persistent dry cough, sneezing, difficulty in breathing, fatigue, malaise, nasal congestion, nausea, diarrhea (Table 2b). They all agreed (strongly agree-71.3% and agree-28.7%) that the COVID spread is quite preventable. Moreover, every participant (150, 100%) strongly agreed to the ways to reduce the transmission of COVID-19, including use of face masks, restriction of movement through lockdown/stay at home, restriction of crowding through social distancing, environmental sanitation, regular hand washing with detergent and frequent use of hand sanitizer. Additionally, 92.7% strongly agreed, and 7.3% agreed that individuals should avoid crowded places such as bus parks and avoid taking public transportations. Almost all

participants highly rated the prompt isolation and treatment (Strongly agree-91.7% and agree- 8.3%) of the confirmed case followed by contact tracing and observation (Strongly agree-87.3% and agree-12.7%) for 14 days to prevent transmission to the general mass. They know (Strongly agree-88% and agree-12%) that the specific treatment for COVID-19 is not available, though only supportive management is possible. All the participants (Disagree-100%) rated against the statement indicating the children and young need not to take preventive measures (Table 2b).

Table 3: The participant's (N=150) risk perception and attitude towards COVID-19

S.N.	Variables (Statements of questionnaire)	Responses (N=150)			
		Strongly agree n (%)	Agree n (%)	Not sure n (%)	Disagree N (%)
1.	I see myself and my family at risk of infection from going to work at hospital these days.	132 (88)	18 (12)	-	-
2.	Health workers are more prone to having the infection.	150 (100)	-	-	-
3.	There is no known risk in coming in contact with a COVID-19 patient.	-	-	-	150 (100)
4.	My willingness to go to work has greatly affected by COVID-19 pandemic.	130 (86.7)	20 (13.3)	-	-
5.	How many days in a week do you go to work since the beginning of the pandemic?	0 day- 43 (28.7%), 3 days- 80 (53.3%), 6 days- 27 (18%)			
6.	How many days in a week do you normally go to work before this time?	6 days- 150 (100%)			
7.	If you are adequately compensated, will you be willing to attend to COVID -19 patients.	-	74 (49.3)	65 (43.3)	11 (7.3)

On the assessment of the participant's risk perception and attitude towards COVID-19, the majority of them (88%) were afraid of going to work in a hospital, and they (100%) also highly rated that health workers being more prone to get infected (Table 3). They all disagreed with the statement –there is no known risk in coming in contact with a COVID-19 patient. Their willingness to work in a hospital has greatly affected

them. They work fewer days (28.7%-0 day, 53.3%-3 days) in a week these days than they were working (6days/wk-100%) before the pandemic. Almost half of the participants (49.3%) agreed to work for COVID patients if they were adequately compensated. However, 43.3% of participants were not sure, and 7.3% completely disagreed with attending such patients even after compensation.

Table 4: Fear of Healthcare Workers to Covid-19 in the perspective of workplace, local, and national policy

S.N.	Variables (Statements of questionnaire)	Responses (N=150)			
		Strongly agree n (%)	Agree n (%)	Not sure n (%)	Disagree N (%)
1.	Work place Safety is adequate	-	15 (10)	65 (43.3)	11 (7.3)
2.	Lack of social insurance policy for health care workers is an obstacle to effective service delivery especially in this period of the pandemic.	106 (70.7)	33 (22)	11 (7.3)	-
3.	Hospital infection control policy is adequate.	-	39 (26)	75 (50)	36 (24)
4.	There is the possibility of getting the infection in the hospital.	90 (60)	57 (38)	3 (2)	-
5.	Adequate surveillance policy has been put in place by the Government.	-	4 (2.7)	29 (19.3)	117 (78)
6.	Adequate testing centers and contact tracing.	-	-	11 (7.3)	139 (92.7)
7.	Testing of temperature with infrared thermometer at the entrance to the hospital is adequate screening exercise.	-	21 (14)	49 (32.7)	80 (53.3)

Fear of health workers to COVID-19 amid the present facility at the workplace, local, and national policy are essential parts of an assessment in this study (Table 4). Overall, the health workers (65%) rated that workplace safety is not adequate. They (50%- not sure, 24%-disagree) were not in favor of adequate hospital infection control. Additionally, a large number (60%-strongly agree, 57% -agree and 2%-not sure) mentioned that they afraid of being infected in the hospital. They (70%-strongly agree, 22%-agree) strongly pointed out

the failure of the national and local policy to uplift the social insurance policy, which is a great obstacle to work effectively in this pandemic. The highly-rated government of Nepal has failed to expand adequate testing centers (92.7%- disagreed) approachable to every community and contact tracing (53.3%-disagreed and 32.7%- not sure). They also do not believe that testing of temperature with an infrared thermometer at the entrance to the hospital is an adequate screening exercise (53.3%-disagree and 32.7%-not sure) (Table 4).

Table 5: The perspective of participants (N=150) regarding Local and governmental facilities to encourage HealthCare Workers to subsidize their risks and fears

S.N.	Variables (Statements of questionnaire)	Responses (N=150)	
		Yes n (%)	No n (%)
1.	Provision of Personal Protective Equipment (PPE) to all staffs working in direct contact with all patients.	115 (76.7)	35 (23.3)
2.	Good stimulus package.	19 (12.7)	131 (87.3)
3.	Impressive life and social insurance policy	6 (4)	144 (96)
4.	Strengthening disease surveillance	26 (17.3)	124 (82.7)
5.	Train and retrain of health care personnel	52 (34.7)	98 (65.3)
6.	Facilities to health workers in private sector less than the government sector	125 (83.3)	25 (16.7)

Health safety and security, along with proper encouragement to health professionals, is the fundamental realm to fight against the COVID pandemic. Therefore, assessing the perspective of participants regarding Local and governmental facilities to encourage HealthCare Workers to subsidize their risks and fears becomes important in this study (Table 5). The majority of the participants (76.7%) said there is a provision of Personal Protective Equipment (PPE) to all staff working directly with all patients. However, 23.3% still mentioned Personal Protective Equipment (PPE) to all staff is not available. Most of them (87.3%) are not aware of a good stimulus package either by the local hospital or by the government of Nepal. Almost all (96%) rated 'NO' to impressive life and social insurance policy either by local or government buddy. The majority of participants mentioned no proper strengthening disease surveillance (82.7%) and no provision of adequate training and retraining of health care personnel (65.3%) at the local or government level. Similarly, a high rating (83.3%) is made to the statement that there are more facilities for health professionals working in the government sector.

IV. DISCUSSION

COVID-19 pandemic has created most panic situations to the human race globally, affecting progress and existence, social activities, education, and health services. Although every sector closed temporarily, the closing of health sectors would be unnatural, inhumane, and impossible 20. Health care workers, the front liners to fight against COVID, work day and night in the hospitals without any break. They are at high risk of getting infected, thus already stressed due to fear of pathogen exposure, long working hours, psychological distress, and fatigue and sometimes with occupational burnout and stigma, and physical violence 21. Moreover, the health workers of Nepal have to work with very minimum facilities and insufficient personal protection equipment and without health and wealth safety and security. Therefore, this study included 150 health professionals at CMCTH to assess their Knowledge, Attitude, risk, and fear towards Covid-19 and also to evaluate the level of their encouragement from the perspective of workplace, local, and national policy. The health professionals who participated in this study were medical officer/intern, specialist/consultant,

nurses, and laboratory staff, among which nurses were the largest in number. Similar to the study by Ronald Olum et al²², our study revealed that most of the health professionals acquire the COVID-19 health information through online news and social media like WhatsApp, Facebook and rest via combined sources including national and international news on TV, WHO and government health media (Ministry of Health and population, MOHP), Nepal.

Regarding the participant's knowledge about COVID-19, most of the health professionals were well aware of the disease, including its clinical presentation, mode of transmission, prevention and treatment outcome, and their scenario in Nepal. They all mentioned that COVID-19 is a viral disease, originated from Wuhan city, China, transmitted rapidly through air droplets from human to human. A high proportion of participants reported that the confirmation of the disease requires the laboratory test and the incubation period is up to two weeks. Interestingly, 56.7 % of participants said that death is not imminent after SARS COV-2 infection, and 43.3% was not sure about it. These findings are incoherence with the study by Bhagvathula AS et al²³, except there was a higher percentage of the rating for the statement - death is not imminent after COVID.

All the participants have a good knowledge regarding the clinical presentation of COVID-19, including flu-like symptoms with high Fever> 38°C, persistent dry cough, sneezing, difficulty in breathing, fatigue, malaise, nasal congestion, nausea, diarrhea. They all agreed that the COVID spread is quite preventable. Further, they knew well about the established preventive measures of COVID-19 to reduce the spread, including proper use of face masks, restriction of movement through lockdown/stay at home, restriction of crowding through social distancing, avoid public transports, environmental sanitation, regular hand washing with detergent and frequent use of hand sanitizer. Almost all participants highly rated the prompt isolation and treatment (Strongly agree-91.7% and agree- 8.3%) of the confirmed case followed by contact tracing and observation (Strongly agree-87.3% and agree-12.7%) for 14 days to prevent transmission to the general mass. They know (Strongly agree-88% and agree-12%) that the specific treatment for COVID-19 is not available, though only supportive management is possible. All the participants (Disagree-100%) rated the statement indicating the children and young need not to take preventive measures. These findings of clinical presentation, prevention, and management are consistent with the report made by Ronald et al²². However, the KAP survey among US residents²⁴ (80%) revealed less than those (91-100%) in our study. Further, the study²⁵ involving the general population in China scored high, similar to our study.

Often, the knowledge of a person reflects the attitude and practices provided with the sound environment. On assessing the participant's risk perception and attitude towards COVID-19, the majority of them (88%) were afraid of going to work in the hospital, and they (100%) also highly rated that health workers have a high chance to get infected. This fear hurts their willingness to go to work in the hospital, and their working days in a week have greatly affected (28.7%-0 day, 53.3%-3 days). These fear perceptions are in line with findings of Zhou et al²⁶ and Maleki et al²⁷ reporting that 85% and 92% of health workers, respectively, were afraid of COVID infection and transmitting it to the family.

They strongly disagreed with the statement – there is no known risk in coming in contact with a COVID-19 patient. However, almost half of the participants (49.3%) agreed to work for COVID patients if they were adequately compensated. Meanwhile, 43.3% of participants were not sure, and 7.3% completely disagreed with attending such patients even after sound compensation. These findings are comparable to Egarra-Valdivia et al²⁸, stating that the fear of healthcare workers towards the COVID-19 pandemic is reinforced by inadequate workplace safety without profound compensation and encouragement.

Regarding the facility at the workplace, local and national policy, most participants expressed a high level of dissatisfaction in our study. More than two-thirds of the participants mentioned that workplace safety⁴ and hospital infection control, including testing temperature with an infrared thermometer, are inadequate. They (70%-strongly agree, 22%-agree) strongly pointed out the failure of the national and local policy to uplift the social insurance policy, which is a great obstacle to work effectively in this pandemic. Further, they expressed that the government of Nepal has failed to expand adequate testing centers (92.7%-disagreed) approachable to every community and contact tracing (53.3%-disagreed and 32.7%- not sure). These findings are in line with the report by Ogo²⁹. In contrast to our study, previous studies³⁰⁻³² mentioned a high level of preventive measures and safety were taken into account to encourage health workers and battle against the common enemy of the world, COVID-19.

The assessment of the perspective of participants regarding Local and governmental facilities to encourage Health Care Workers to subside their risks and fears becomes important in this study. Like previous studies³³⁻³⁴ majority of the participants (76.7%) in this study said there is a provision of Personal Protective Equipment (PPE) to all staff working in direct contact with all patients. However, 23.3% still mentioned Personal Protective Equipment (PPE) to all staff is not available. Most of them (87.3%) are not aware of a good

stimulus package either by the local hospital or by the government of Nepal. Almost all (96%) rated 'NO' to impressive life and social insurance policy either by local or government buddy. The majority of participants mentioned no proper strengthening disease surveillance (82.7%) and no provision of adequate training and retraining of health care personnel (65.3%) at the local or government level. Similarly, a high rating (83.3%) is made to the statement that there are more facilities for health professionals working in the government sector. Health safety and security, along with proper encouragement to health professionals, is the fundamental realm to fight against the COVID pandemic³⁵. The risk of reporting increased positive case for COVID-19 among front-line health-care workers could be reduced by Health-care systems by ensuring adequate availability of PPE and develop additional strategies to protect health-care workers from COVID-19. ³⁵

The intensive work drained health-care providers not only financially but also physically and emotionally. Health-care workers showed their resilience and the spirit of professional dedication to overcome difficulties. Comprehensive support should be provided to safeguard the well-being of health-care providers. Regular and intensive training for all health-care providers is necessary to promote preparedness and efficacy in crisis management³⁶.

The limitation of this study could be the fewer number of participants and less involvement of a diverse group of Health faculties/workers from different hospitals in this region. Further, a better tool than this questionnaire could be used to assess their knowledge, attitude, and fear and risk perception to COVID-19 and their opinion to amend local and national health policy.

V. CONCLUSION

Health professionals bear adequate knowledge regarding clinical presentation, mode of transmission, established prevention strategies and treatment outcome, and their scenario in Nepal. However, due to inadequate hospital work safety, poor infection control, lack of standard local and governmental strategies to empower financial, social, and health security to health care providers, most health professionals have lost their motivation to go to work in a hospital. These factors not only has limited their working days in a week but also heightened their fear and risk perceptions to COVID-19. Beyond these, our study also revealed that comprehensive support should be aligned for the wellbeing and safeguard of health-care providers. The standard policies should be made to provide regular and intensive training for all health-care providers and boost them emotionally and socially to promote preparedness and efficacy in crisis management to promote positive preventive and therapeutic practices and to avert negative attitudes.

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Acknowledgments

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The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.



Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

- a) A title which should be relevant to the theme of the paper.
- b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
- c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
- d) An introduction, giving fundamental background objectives.
- e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
- f) Results which should be presented concisely by well-designed tables and figures.
- g) Suitable statistical data should also be given.
- h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

- i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
- j) There should be brief acknowledgments.
- k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



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It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

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The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.



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Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

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TIPS FOR WRITING A GOOD QUALITY MEDICAL RESEARCH PAPER

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



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8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

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12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

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Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.



20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

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23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
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- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

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The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

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- Submitting a manuscript with pages out of sequence.
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- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

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Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

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Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.



The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."



Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<i>Result</i>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<i>Discussion</i>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



INDEX

A

Anastomosis · 2
Angioedema · 82
Annoying · 39, 40, 43, 45
Arrhythmia · 3

B

Bandwagon · 22

C

Castelo · 39, 41, 75
Categorized · 11, 15
Compensated · 88, 92

D

Decades · 42
Diabetic · 26

E

Elaborated · 41
Epithelial · 82, 96
Etiquette · 14, 19

H

Heightened · 18, 94
Hence · 39, 41

I

Inadequate · 17, 42, 80, 92, 94
Incoherence · 92
Intubation · 2, 17, 22

M

Malignancy · 2, 3, 4

N

Necrotic · 2, 7
Noisiness · 42

P

Pereira · 39, 41, 42, 75
Precautions · 15, 19, 23, 84

R

Roughness · 43, 77

S

Stigma · 14, 82, 84, 91
Stimulus · 41, 80, 90, 94
Surveillance · 88, 90, 94

T

Tonality · 40, 42, 43, 44, 45, 76, 78
Turbulence · 39

U

Uplift · 80, 90, 92

W

Wakefulness · 41, 76



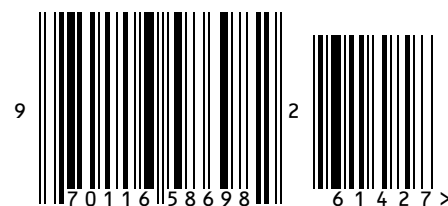
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