



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**ASSESSMENT OF CROSS BORDER PREPAREDNESS AND RESPONSE MEASURES TO
COMBAT THE IMPORTATION OF INFECTIOUS DISEASES IN WALVIS BAY, NAMIBIA**

BY

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A thesis submitted to the Faculty of Health and Applied Sciences for fulfilments of the
academic requirements for the degree of Master of Health Science

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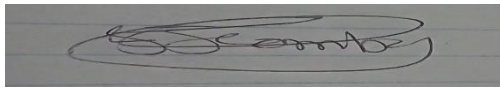
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2022

DECLARATION

In fulfilment of the academic requirement for a degree of Master of Health Science, Faculty of Health and Applied Science, Namibia University of Science and Technology, Namibia, I Mwakondja Alisa Ikela, declare that work in this thesis is my original work except where referenced. I have not formally submitted this work for examination to any other institutions. I carried the work of this study out under the supervision of Dr. R. Mahalie and Mr. Jomin George, titled: Assessment of cross border preparedness and response measures to combat the importation of infectious diseases in Walvis Bay, Namibia.

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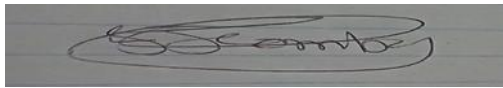
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ACKNOWLEDGMENTS

I acknowledge and praise my Creator, the Lord Jesus Christ, for His Mercy and goodness upon my life. I want to thank the Lord for letting all things work together for me to complete this project.

I acknowledge the extraordinary commitment of my supervisors Dr. Roswitha Mahalie and my co-supervisor, Mr. Jomin George, who guided me with their knowledge and experience through this research.

The immense support received from my employer, the Ministry of Health and Social Services is greatly acknowledged and appreciated.

I acknowledge and appreciate all those who took part in this project, especially the stakeholders at the points of entry into Walvis Bay.

I give adoration to the dedicated team of Port health services in Walvis Bay, and I appreciate their hard work and support towards improved health service delivery.

The incredible support received from my colleagues and family is acknowledged; they have encouraged me to pursue and make a success of my study despite the social challenges encountered during COVID-19 pandemic.

DEDICATION

I dedicate this dissertation to my husband, Mr. Clemens Jeomba; thank you for your love, support, and patient. To my colleagues, thank you for your unwavering support and encouragement.

LIST OF ABBREVIATIONS

ACI	Airport Council International
COVID -19	2019 Corona Virus Disease
ECDC	European Centre for Disease Prevention and Control
EPR	Emergency Preparedness and Response
FGD	Focus Group Discussion
HIS	Health Information System
H1N1	Hemagglutinin Type 1 and Neuraminidase Type 1
IDSR	Integrated Disease Surveillance and Response
IHR	International health Regulations
IMO	International Maritime Organisation
JEE	Joint External Evaluation
KII	Key informant Interviews
MERS	Middle East Respiratory Syndrome
MOU	Memorandum of Understanding
MOHSS	Ministry of Health and Social Services
NAC	Namibia Airport Company
NAMPORT	Namibia Port Authority
NPHS	National Port Health Strategy
NGO	Non-Governmental Organizations
NUST	Namibian University of Science and Technology
PHEIC	Public Health Emergency of International Concern
PHO	Port Health Officer
PMO	Principal Medical Officer
PoE	Points of Entry
PPE/C	Personal Protective Equipment and clothing
RCCE	Risk communication, community engagement
SARS	Severe Acute Respiratory Syndrome
SSEC	Ship Sanitation Exemption Certificate
SSCC	Ship Sanitation Control Certificate
WHO	World Health Organisation

Abstract

Cross-border health measures are crucial to ensure efficient and fast responses against infectious disease outbreaks. Therefore, the effectiveness of health systems and their compliance with international laws have prompted significant debates that will unearth practices to enhance preparedness, response and control the spread of infectious diseases at the points of entry. The study aimed at assessing cross-border health measures to combat the importation of infectious diseases between Namibia and its interacting countries.

Purpose

The purpose of the study was to conduct an assessment to determine cross-border health measures to combat the importation of diseases infectious diseases between Namibia and its interacting countries.

Methods

The study adopted an exploratory, descriptive, cross-sectional, qualitative research design to determine cross-border measures that assist in combating the importation of infectious diseases. A total fifteen (15) key informant interviews were conducted which were complemented with three (3) focus group discussions and participants' observations. The study focused on Walvis Bay port health services as a study unit. Data were thematically analysed with ATLAS.ti version-9 software to identify critical elements and capacities for cross-border health measures, to summarise the opinions, attitudes and practices toward preparedness and response at the points of entry.

Study Results

A broad range of cross-border health measures are implemented at Walvis Bay. Four main themes namely, cross-border preparedness and response capacities required at entry points; measures to strengthen cross-border health measures; preparedness and response measures in place to combat the importation of diseases, and lastly, adherence to preparedness and response measures emanated from the study. Additionally, the study found that intensified collaborative efforts are required to implement cross-border health measures. Budgetary constraints limit the

implementation of border health capacities despite the availability of staff, minimum operational capacities, and legal framework on health measures.

Conclusion and Recommendations

Cross-border health measures exist in many forms which requires a multi-sectoral approach. However, cross-border health management obstacles such as lack of structures on cross-border health agreements, lack of concrete operational cross-border plans, and lack of joint exercises and communication of cross-border health measures are major drivers of importation of infectious diseases. Hence, it is recommended that the development and maintenance of border health capacities and cross-border health collaboration efforts be prioritised to foster preparedness and response that will combat the importation of infectious diseases through points of entry.

Keywords

Cross-border health measures; importation of infectious diseases, Namibia; preparedness and response; entry points; Harbour; Airport

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Chapter 1

ORIENTATION TO THE STUDY

1.1 Introduction

Employing cross-border health measures to combat and delay the intrusion of diseases into countries' jurisdictions is an imperative preventive, preparedness, and response method for the Ministry of Health and Social Services in Namibia. Although cross border health measures have been clearly articulated in the International Health Regulations (IHR), implementation of these measures at both national and regional level requires preparedness and response programs (Katz and Fischer, 2010; Heymann, Chen, Takemi, Fidler, Tappero, Thomas & Rannan-Eliya 2015). Recent infectious disease outbreaks such COVID-19 has unearthed the consequences of pandemic spread, which demand a new approach to cross-border health preparedness and response measures (Spennemann, 2021). Consequently, it is important to pay attention to cross border migration and trade through implementing cross border health measures (Lee, Grépin, Worsnop, Marion, Piper & Song, 2021).

Infectious disease outbreaks are common; therefore, countries are compelled to prepare cross border points and strengthen cross border health programs in order to prevent the transmission of infectious diseases (Kinsman *et al.*, 2018; Lee *et al.*, 2021). Despite infectious diseases transmission accounting for a million of deaths around the world, until now, little importance has been given to the implementation of cross border health measures, which is at the heart of preventing the spread of pandemics (Lee, Worsnop, Gerpin & Kamradt-Scott, 2020). The impact of cross border measures is also not well understood, which led to severe criticism especially in the handling of response of COVID-19 (Tingerstrom and Wilson, 2020). According to Lee *et al.*, (2021) cross border health measures adopted during COVID-19 such as travel restrictions were largely limited to economic interests and political pressure rather than embracing the means of preventing infectious disease importation.

Prevention of disease transmission and importation is a fundamental principle in improving public health and should be prioritized at cross border points (WHO, 2005; MoHSS, 2013). The public health concern at hand is that there are still many emerging or persistent ill trends associated with unequal and lack of cross border health capacities as reiterated by Lee *et al.* (2021). Although infectious diseases continue to spread (Outwater, Leshabari & Nolte, 2017), and while cross border health measures may vary in magnitude and application, IHR collectively recommends countries not to interfere with international traffic and trade as they respond to disease outbreaks.

Consequently, the controversy over the cross-border health measures imposed by governments aroused around the globe during the COVID-19 response, with condemnation in that the standards applied did not just restrict trade and travel alone but created distrust on the effectiveness of governments' health response systems (Lee et al, 2021). Furthermore, existing literature expressed that it is challenging to improve public health abilities because of lack of capacity to measure the effectiveness of health preparedness and response (Tung, 2015). In addition, after an extensive literature review, no study findings relating to assessment of cross border health preparedness and response measures in Namibia have been found. This study focused on assessing the status of border health systems preparedness and response measures to combat the importation of infectious diseases at entry points and explored the relationship between risk perception, resources provision, health preparedness and response plans at cross border points in Walvis Bay, Namibia.

1.2 Background to the study

Each year, international travel is on the rise, as millions of people travel for professional, social, recreational, and humanitarian purposes (WHO, 2010). Efficient public health systems' ability to detect and respond to communicable diseases is challenged by this social, economic, cultural connectivity and associated human mobility (Merrill *et al.*, 2021). Travellers can serve as sentinels for disease carriers and contribute to global disease transmission. These challenges proliferate

when unequal public health and medical systems with distinctive preparedness, response and risk assessment tools are in place (Merrill *et al.*, 2021).



Figure 1.1: Namibia National Road, Aircraft and Sea Designated entry points

In view of this Namibia's, Walvis Bay harbour in Erongo Region serves as a transport hub for regional and international trade; and travel between Southern African Development Community (SADC) and the rest of the world. Admittedly, with the acceleration and expansion of international movement through these points of entry, the possibility of increased risk of infectious disease importation into Namibia is a salient reality (MoHSS, 2020).

It is worth mentioning that local border health measures implemented in the past years have limited and combated the importation of infectious diseases into Namibia (MoHSS, 2016).

However, in 2019, Namibia has reported an imported case of H1N1 and in 2020 several cases of COVID-19 (MoHSS, 2020). In response to COVID-19, Namibia immediately responded by adopting lockdown and cross border movement restriction measures (Julius, Nuugulu & Julius 2020).

Trade and travel into and out of Namibia is exercised at one of the following cross-border points indicated with a number or a letter in figure 1.1 and table 1.1:

Table 1.1: Names of Gazetted points of entry in Namibia as shown in figure 1.1

A. Sea entry points	B. Aircraft entry points	C. Road entry points
Lüderitz Walvis Bay	A. Ondangwa	1. Ruacana
	B. Rundu	2. Omahene
	C. Katima Mulilo	3. Oshikango
	D. Grootfontein	4. Katwitwi
	E. Walvis Bay	5. Rundu
	F. Hosea Kutako International Airport	6. Wenela
	G. Eros	7. Ngoma
	H. Luderitz	8. Muhembo
	I. Oranjemund	9. Dobe
.		10. Buitepos
		11. Ververdiend
		12. Klein Manasse
		13. Ariamsvlei
		14. Veloorsdrif
		15. Noordoewer
		16. Sendelingsdrif
		17. Oranjemund

Namibia is demarcated into fourteen (14) political, administrative regions and out of the fourteen (14) regions, two (2) have international seaports, three (3) have international airports and nine (9) have ground crossing points of entry. Erongo Region, being one of the fourteen (14) regions, has two (2) designated points of access, the sea and air border post. Major economic activities in Erongo Region are intensified in the fishing, mining, and tourism sectors (Erongo Regional Council Annual Report, 2021). Two (2) international entry points, namely Walvis Bay International Airport and Walvis Harbour, are within Walvis Bay health district in which the study was based. Notwithstanding, Erongo region has other three (3) health districts, namely Omaruru, Swakopmund and Usakos which do not have cross border points. Figure 1.2 below depicts Erongo region map, its health districts and settlements or administrative constituencies.

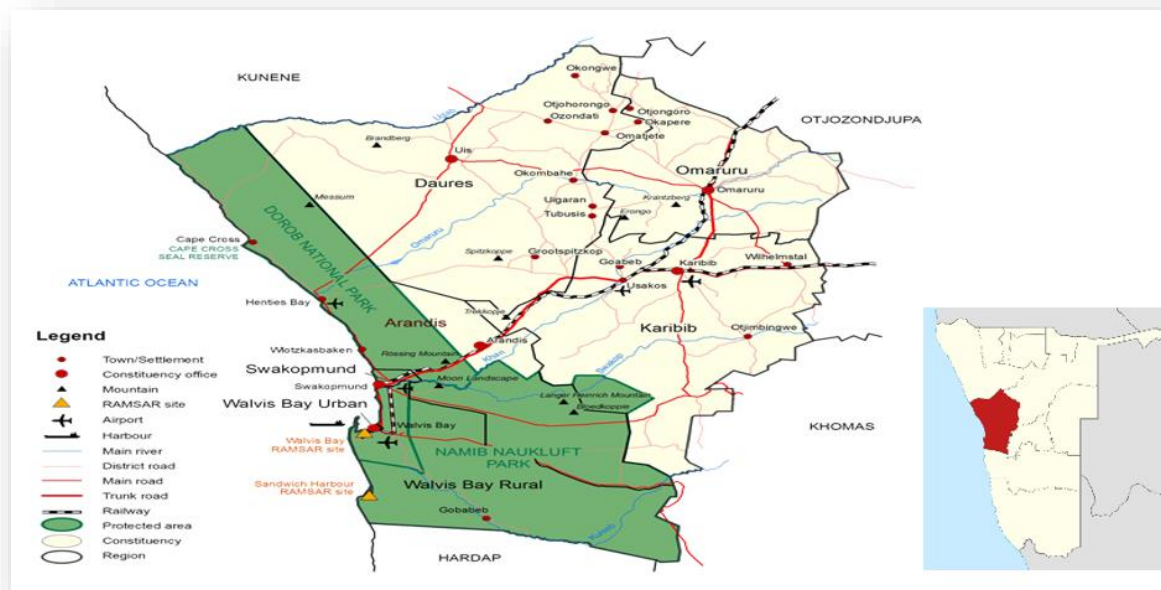


Figure 1.2: Erongo Region map (Erongo regional council, 2021)

Namibia's Joint External Evaluation (JEE) led by World Health Organization revealed that the country has a well-developed National Port Health strategy, though there are development needs identified for improved structures at airports, seaports, and ground crossing (WHO, 2016). Port health services across the country need to be strengthened in order to implement the

required standard operating procedures (SOPs) at all border points. It has been, however, a concern that routine presence of port health staffs to implement the SOP is observed only at international airports and seaports compared to the nonexistence of the team at ground crossing points. The robust preparedness and response measures against the importation of infectious diseases will serve as a tool to minimise and prevent morbidity, mortality and social disruption resulting from outbreaks.

1.3 Problem Statement

Lack of cross-border preparedness and response capacities lead to importation of infectious diseases into a country. The consequences of insufficient public health capacities at points of entry are that pandemics will continue to threaten global health securities (Merrill et al, 2017). Public health systems are supposed to detect communicable diseases and to respond in order to minimize their spread. However, without border health strategies that prevent the importation or exportation of diseases and minimising extra influences on implementations, a pandemic free world is inevitable (Wangdi, Gatton, Kelly, & Clements, 2016).

Mostly not all countries have incorporated a complete POEs preparedness and response features in their national surveillance systems, neither have they met IHR 2005 obligations for designated POEs, leaving them susceptible to potential importation of infectious diseases (Merrill *et al*, 2017). Additionally, infectious disease has been confirmed in several countries which have relations with Namibia (Kandjimi, 2021). Moreover, Kandjimi (2021) postulates further that there is a history of communicable disease importation into Namibia from neighbouring countries, diseases such as, Hepatitis E, COVID -19, Malaria and Polio. The challenges facing Namibia is to ensure timely implementation of response and preparedness plans and to ensure the reduction of mortality and the morbidity due to cross-border infectious diseases importation, (WHO 2016).

There is a dire need for global movements and those entities interacting between Namibia and affected countries, to expedite the implementation of containment measures at cross border points to control the spread of infectious diseases into the country. The challenge of monitoring infectious diseases at the borders in Namibia is influenced by circumstance that each infectious disease is unique and linked to a frequently changing environment or few standardised processes

in controlling it (Lee *et al.*, 2020). Furthermore, health systems in Namibia is faced with the following challenges: lack of evidenced-based guidelines; failure to strictly applying the law; endowment of equipment's, tools and infrastructures; lack of staffs and public education about health risks; lack of public private partnership and collaboration and lack of financial resources (MoHSS, 2016; WHO, 2006.)

Additionally, the fact that infectious disease pandemics are usually rare in nature and diverse in impacts hampers the adoption of specific health implementations. Such challenges, generally lead to outputs of preparedness activities which are not made immediately apparent. Consequently, tend to compromise the designing of specific health goals or defining border settings and response structures required for preventing importation of infectious diseases. In addition, lack of systematically linked and integrated data capturing processes and systems at points of entry across Namibia, jeopardizes planning and informed decision-making process (Du Plessis, personal communication, November 20, 2021). Furthermore, the absence of scientific studies and health surveillance reports at the border has made it difficult to determine the effectiveness of health monitoring and disease responding capacities employed at cross- borders (Sherrieb, Norris & Galea, 2010; Kandjimi, 2021).

1.4 Significance of Study

The study contributes significantly towards the advancement of preparedness and response health measures that aims at combating cross border disease transmission. The findings of this study yielded significant data to be used as a pivotal springboard to strengthen health systems that will improve, promote and maintain the existing standards and structures and thus expediting the achievement of an eighty percent (80%) target population level impact in epidemics control. Best practices in terms of tackling cross border health concerns were also highlighted as significant in this study. The existing gaps were identified by this study thus providing baseline data for future researchers in public health, safety, and environment administration. This study outcome could be used in developing guidelines for cross border preparedness and response measures in Namibia.

1.5 Research Aim and objectives

The study aimed at assessing the existing cross-border health measures to combat the importation of diseases infectious diseases between Namibia and its interacting countries.

To achieve the research aim, the following three specific objectives were identified:

1. To determine preparedness and response measures in combating the importation of infectious diseases at points of entry in Walvis Bay, Namibia
2. To identify socio- economic factors that influence the effectiveness of cross border preparedness and response measures at entry points in Walvis Bay, Namibia.
3. To determine institutional factors that promotes effective implementation of port health services in Walvis Bay, Namibia.

1.6 Research questions

The research responded to the following questions:

1. What are preparedness and response measures that are in place in combating the importation of diseases at entry points in Walvis Bay, Namibia?
2. What socio-economic factors that influence preparedness and response measures at entry points in Walvis Bay, Namibia?
3. What institutional factors that promotes effective implementation of port health services in Walvis Bay, Namibia.

1.7 Chapter summary

This chapter provides an introduction and brief background information to the study, statement of the problem as well as the research aim, objectives, and questions. Furthermore, the significance of the study is also stated in this chapter. The next chapter will review relevant literature pertaining to this study.

Chapter 2

Literature review

2.1 Introduction

This chapter presents the review of literature that has informed the design and implementation of this study. In this review, primary and secondary sources of information including theses, both local and international literature, are reviewed to provide background to the research problem. The study is based on a systemic search of information, assessing border health preparedness and response measures. The keywords used during the investigation included border health security, disease early warning and response, border health measures, and cross-border health structure and mechanisms. The first section of this chapter gives a brief description of the border health preparedness and response measures. Furthermore, the conceptual analysis is made on the various arguments over cross border health issues.

2.2 Cross-border health preparedness and response measures.

A theoretical issue that has dominated the field is that border health systems often make little progress because of a lack of shared, agreed criteria and understanding of cross border health preparedness and response subjects (Kinsman *et al.*, 2018). Consequently, the world had experienced a series of epidemics during the past decades of which laid bare critical health weaknesses at cross border points (Lee *et al.*, 2021). Moreover, the General Report on the activities of the European Union acknowledges that the current border health structures and mechanisms could do little to trigger timely outbreak response, coordinate risk communications and ensure solidarity among stakeholders in disease response and preparedness (Scholz, 2021).

Pandemics have occurred throughout human history and they continue to occur across the globe (Scholz, 2021). Although it has been conclusively shown that disease outbreaks are likely to occur, less emphasis has been made that the increased, growing mobile human population has risked it more to control the spread of diseases across the world. For example, the global spread of COVID-19 demonstrated that many countries are not safe from health threats,

especially those with novel nature. Previous studies have only focused on the prevention of reoccurring of known infectious diseases (Kirchner, 2012; Nelson, Laurie, Wasserman & Zakowski, 2007).

Additionally, intercontinental travel and trade create an opportunity for humans to come into contact with novel and emerging pathogens, leading to the rapid spread of infectious pathogens (Mullen, Potter, Gostin, Cicero & Nuzzo, 2020). Moore & Dauseys (2015) posit that infectious disease has threatened the world which warrants the need to adopt demand-driven, transnational approaches for disease prevention, detection, and response. Due to an increase in epidemic incidents, the World Health Organisation (WHO) articulated the International Health Regulations (2005), demanding each country to develop and maintain public health core capacities at entry points. However, the global spread of the influenza H1N1 in 2009, Zika virus in 2016, Ebola Virus disease in 2014 and Corona Virus Disease (COVID-19) in 2019 made it apparent that capacities complemented in IHR (2005) are not strong enough to prevent importation of various diseases into states if they are not supported at different levels of public health response (Ashour, Elkhatib, Rahman & Elshabrawy, 2020).

The following figure displays a timeline of several infectious diseases with pandemic effects for the past two decades (Mullen *et al.*, 2020):

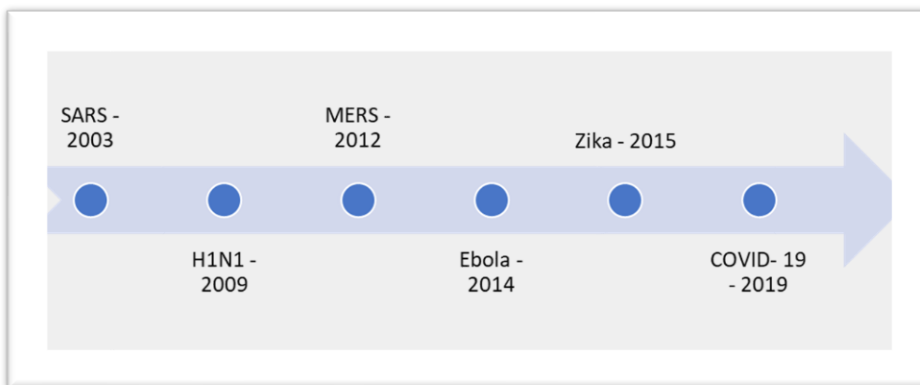


Figure 2.1: A timeline of infectious diseases that spread worldwide in the last two decades

Numerous studies have argued that these pandemics have caused significant social, political and economic ramifications. According to Kinsman *et al.* (2018) diseases considered health threats in

certain parts of the world can potentially spread and affect the world as a whole. The recent 2020 Ebola outbreak in the Democratic Republic of Congo (DRC) and Guinea compared to 2014-2016 Ebola outbreaks that spread worldwide and affected 57 countries, a clear reference. Although several disease outbreaks like yellow fever, cholera, meningitis might not have spread worldwide on any occasion, still, as these infectious agents have been reported in various parts of the world, this should prompt all countries to be prepared against any severe attack in their states (WHO, 2000).

The detailed examination by MoHSS (2016) showed that cross border population movement was a potential risk of disease spread across borders. MoHSS supported the view of Relman, Choffnes, & Mack (2010) who argued that movement issues have become increasingly salient in politics and diplomacy. Although little attention has been paid to the relationship between global movement and global health, this link is becoming increasingly crucial. The cross-border movement control is becoming a metaphor for the evolution of public health security (Vearey, de Grunchy, & Maple, 2021).

A recent systematic review indicated that public health preparedness and response efforts are being politicized and undermined instead of being prioritised (Janiec *et al.*, 2021). Little expression has been made in literature on vigilance against the importation of infectious diseases as an essential tool to secure global health security. Generally, border health control efforts are meant to discourage the translocation and spread of infectious diseases. Kinsman *et al.* (2018) conveyed that it is necessary to conduct a series of assessments to regularly review the public health preparedness and response status in relation to other relevant sectors to prevent disease importation across borders.

Although other studies have considered that the international spread of infectious disease has challenged governments' response efforts, little focus has been made on improving governments' border health preparedness and response activities (Kinsman *et al.* 2018). According to Merrill *et al.* (2017) insufficient public health capacities at entry points were made more apparent during the 2014-2016 West Africa Ebola outbreaks. Notwithstanding, Lee *et al.* (2021) expressed that weaknesses in border health capacities were further made more evident

in the year 2020, concluding that after few months of COVID-19 outbreak in Wuhan, China, in December 2019, the virus spread broadly to almost every country in the world.

According to Kluge *et al.* (2018) international endeavours to contain infectious diseases began over 150 years ago and are today embodied in the International Health Regulations (2005). Furthermore, Lee *et al.* (2021) is of the opinion that border health system status for various countries, including Namibia, did not demonstrate the capabilities of preventing the importation of infectious diseases such as COVID-19. It is evident that not all diseases with pandemic potential have previously spread to every country; however, this could have led to a relaxation in implementing cross border health measures. Nevertheless, Lee *et al.* (2021) narrated that COVID-19, with its novel nature has potentially spread to over 95% of countries around the world between December 2019 and August 2021.

COVID-19 is the latest pandemic the world is battling with, and it will not be the last on a series of pandemics. According to Jones *et al.* (2018) the rate of infectious diseases emerging, increasing, and spreading is significant. Health systems, therefore, need to recognise capacities that prevent, mitigate, prepare for, respond to, and recover from the effects of a public health emergency. Kluge *et al.* (2018) has however further revealed that measuring the effectiveness of border health system capacity can be difficult.

Maintaining a border health preparedness and response system is a dynamic effort that could be costly (WHO, 2016). Epidemics are often not predictable when they occur, and each disease outbreak response usually requires outstanding efforts because of variance in causative agents. Several studies together with Tang (2015) have indicated that preparedness plans made under everyday stress and not in the non-routine stress environment cannot measure the response outcomes correctly and maintenance of such measures can be cumbersome.

Lee *et al.* (2021) narrates further that traditional form of border health implementations proved inadequate during the recent spread of COVID-19. Therefore, health systems should consider that effects of pandemics are tentative, growing and usually with a high demand for socio-economic cost and skills. Dynamic frameworks in all health settings should be developed focusing

on the establishment of an improved border health system. Developing an improved border health system depends on the existing, planned and previously applied cross-border health measures (Kinsman *et al.*, 2018).

According to WHO (2015) there is a narrow view that postulates that improved cross border preparedness measures are merely additional activities laid on top of existing public health responsibilities. On the contrary, another researcher suggests that public health staff perceive preparedness and response activities as extra work beyond their regular duties (Tang, 2015). However, Nelson *et al.* (2007) expressed that preparedness and response activities indeed expand the role and responsibilities of public health departments, on the other hand these efforts also rely mainly on activities at the core of public health services.

The researcher concurred with Nelson *et al.* (2007) who attested that in an outbreak, preparedness and response activities can occur through critical incident monitoring process. Preparedness and response should involve a coordinated and continuous process of planning and implementation that relies on measuring performance and taking corrective actions. In addition, cross border preparedness and response processes should be monitored within the context of events that occurred during implementation of health activities (MoHSS, 2016). Events ranging from the number of travellers and cargoes arriving at entry points; number of illnesses reported among arrival passengers; number of testing and inspections conducted, number of possible exposure or contamination detected at the points of entry, the extent to which the health department shaped communication to the public regarding cross border health threats and the health department's success in contacting individuals in the event of an outbreak.

According to Kluge *et al.* (2018) border health preparedness and response system should regularly improve on planned strategies, considering the diversity of risks of pandemics. It has been suggested that nations have to put procedures and structures that seek to protect people's well-being. However, there are inconsistencies with the argument, given that public health response would require scientific expertise for an effective cross border health implementation (Lee *et al.*, 2021). Considering that the global population movement has unified the world and that each state is at risk of disease importation, detailed examination by Kinsman *et al.* (2018) showed that

there had been relatively little input in conducting multidisciplinary research on international issues.

The existing studies could not acknowledge that although cross border health response is part of public health systems, prioritizing cross border health security as a first country's defence against the importation of diseases is the key element to the response (Kinsman *et al.*, 2018; Vearey, de Grunchy, & Maple, 2021). One of the critical criteria for disease preparedness and response is limiting the risk of diseases spread across nations. If cross-border health measures are not established, regularly improved and scientifically supported, the possibility of an infectious disease being introduced into the communities remains high (MoHSS, 2016). Moreover, studies on the global health system and the compliance with international health guidelines have emphasised the need to strengthen the preparedness and response roles of different agents that facilitate world travel and trade (Nelson, 2007; Kinsmen *et al.*, 2018). Such agents include health authorities, airlines, shipping companies, the tourist industry and the business community.

Moreover, cross-border health measures can be applied at different stage in the journey, however measures applied only at one stage in the journey may be inadequate because of the varying incubation period and transmission rate of infectious diseases (Lee *et al.*, 2021). Nevertheless, application of cross border health measures provided under article 43 of the International Health Regulations 2005 should serve as guidance to cross-border response, additionally to specified criteria in national policies. According to Lee *et al.* (2021) countries have adopted a wide range of measures, implementing them in highly varied ways during the 2020 and 2021 COVID-19 responses. This has contradicted the IHR 2005 requirements, which permits border health measures that are not restrictive to international trade and traffic and neither invasive nor intrusive to persons, but rather the reasonably available alternatives that will achieve the level of health promotion and safety protection.

The WHO (2021) reiterated the importance of prompt reporting of ongoing and future pandemics with the aim of discovering scientific evidence that supports health measures as a matter of urgency. It is evidenced that traditional border health measures are somewhat malleable partly because of the limited, uncertain, and rapidly growing demand for scientific evidence (Davis,

2020). A detailed examination by Lee *et al.*, (2021) showed that diverse and sometimes inconsistent terminology applied to describe cross border practices had reduced the compatibility and generalizability of research findings. A considerable published amount of literature reveals that pandemics continue to increase in frequency (Jones et al., 2008; WHO, 2020; Lee *et al.*, 2021). Therefore, such disease occurrences should prompt all nations and scientists to re-evaluate their readiness against disease spread. Lee *et al.*, (2021) concurs with the analysis of Jones et al., (2018), which demand resilient cross-border health measures that is supported with scientific evidence.

According to Lee *et al.*, (2021) during the early stage of response for COVID-19 pandemic, many national implementations were uncoordinated and chaotic, as they were being adopted in varying scope, duration, and forms and with little scientific guidance. Preparedness and response activities have been difficult to measure and apply. However, many countries have taken the trial-and-error application as outlined below:

1. There are no specific national standards ideal for border health preparedness and response. Consensus about minimum functions expected to be implemented at all levels is lacking, therefore, desired outcomes couldn't be reached in most instances (Tang, 2015).
2. Lack of clarity and inconsistency in terminology impacting cross border health has challenged the debates about the legality and effectiveness of cross boarder health measures (Lee *et al.*, 2021).
3. Lack of standardised and validated instruments to assess border health preparedness and response measures. The governments' actions to ensure that the risk of disease importation is reduced are about using the language that seal borders and restrict traffic from high-risk areas. However, the problem with this approach is that if there is no consensus established about any tool and if no validated tool has been adopted inclusively, the desired application will be inconsistent (Lee *et al.*, 2021).

2.3 Public health emergency of international concern (PHEIC)

In 2020, Davis interpreted the development of cross-border health measures stipulated under article 12 of IHR 2005, namely, the *“Determination of a public health emergency of international concern”*. Conclusively, during the event of a deadly disease outbreak that has the potential to spread across the globe, a group of World Health Organization experts can declare a “Public Health Emergency of International Concern (PHEIC)” (Douglas and Staudenmaier, 2020). Durrheim, Gosdtin & Moodley (2020) have claimed that declaration of a disease outbreak as PHEIC is required to trigger global preparedness and response actions. Looking back to the preceding instances of PHEIC and since WHO implemented the procedures to declare PHEIC in 2005, the WHO has only done so six times. These emergencies include the H1N1 virus (2009), West Africa’s Ebola outbreak (2014-2016), polio (2014), Zika virus (2016), Ebola outbreak in the Democratic Republic of the Congo (2020) and the novel coronavirus disease outbreak (2019).

Nevertheless, these declarations do not necessarily nullify the potential of other infectious diseases to spread globally, thus WHO declarations should be welcomed as an alert to intensifying measures against all health threats says Durrheim, Gosdtin & Moodley (2020). Among the six previously declared public health emergencies since 2009, some are still active, such as Zika and COVID-19 (Davis, 2020). In a different argument by Douglas & Staudenmaier (2020) there are recent health events such as the 2012 Middle Eastern Respiratory Syndrome (MERS), 2019 Nigeria Lassa fever, 2015 Angola yellow fever that were not declared as PHEIC. The panel of experts, called the IHR Emergency Committee, ought to discuss events before declaring it a crisis of international concern (Douglas & Staudenmaier, 2020).

According to MoHSS (2011) public health response should not wholly be determined and depend or wait upon WHO declarations, instead, “Integrated Disease Surveillance and Response” (IDSR) programs must be applied at all levels of health care. IHR 2005 pointed the importance of overlaying functions of the national health system and being actively prepared to respond to any emerging and ongoing health event. A study conducted by David (2010) has considered the relationship between border health measures and the abilities of nations to minimise the risk of disease spread across borders. Consistent arguments are more inclined to believe that previous

health events would not have escalated to a stage of being declared as PHEIC if border health measures were effective (Kircher, 2012). Data from existing studies show also that cross border health measures applied during the past pandemics were not universal and consistent, making it difficult to contain infectious diseases (Lee *et al*, 2021).

The process by which WHO decides whether to declare PHEIC under the International Health Regulations has drawn criticism. Researchers such as Davis (2020) argued that, if PHEIC declarations served the purpose of alerting about the risk of transnational disease spread, pandemics could have been averted and contained from spreading. According to Durrheim, Gostin, & Moodley (2020) the WHO Emergency Committee process lacks transparency, uses irrelevant considerations, political interference, undue influence, and delays to declare a PHEIC when it's appropriate to do so. Reports condemned a 4-month delay by WHO after the international spread of Ebola in West Africa in 2014 before declaring a PHEIC. Experts contended that little had changed when the COVID-19 outbreak originated in China and was reported to WHO on Dec 31, 2019. The delay in declaring COVID-19 as a PHEIC was portrayed at the first and second WHO Emergency Committee meeting without reaching a consensus on when to consider a global health emergency (Durrheim *et al.*, 2020).

Durrheim *et al.* (2020) have addressed the delays in declaring a PHEIC as the factor leading to severe detrimental consequences. Delays could reassure governments and donors into a false sense of security. One of the significant drawbacks of delays in declaring a PHEIC could be that if WHO does not consider the situation an international emergency, then it does not require a surge response. Nevertheless, other public health experts including Douglas & Staundenmaier (2020) maintain that the purpose of a PHEIC declaration is to catalyse timely evidence-based action, spur increased international funding and support; and limit the public health and societal effects of emerging and re-emerging diseases. Though there are concerns that countries may pursue harmful measures to stop the importation of disease, if WHO does not make the declaration, other studies maintain that the PHEIC process requires urgent reform (Durrheim, Gostin, & Moodley, 2020).

2.4 Border Health Security

According to Janiec *et al.*, (2021) cross border movement generally affects more than one state. Consequently, the application of cross border health measures should be considered as a collaborative effort between states. Infectious disease prevention and control have traditionally been regulated within and outside borders through a patchwork of country-specific legislative documents. Therefore, it is crucial to take into consideration legal aspects in respective countries as a way of guidance in applying cross border health measures (Lee *et al.*, 2021). To solve events of international concern, the effective exchange of information among affected states is crucial.

Kruger *et al.* (2018) emphasized that border health management is a neglected area in public health. The attempt to reduce the importation of infectious diseases should be at the foundation of establishing border health management. The importation of infectious diseases into previously pandemic free countries remains an ongoing risk. Following Ebola, SARS CoV1 and COVID-19 outbreaks, the risk of disease spread was notable with discoveries that the general wellbeing is threatened by re-emerging and newly emerging infectious disease. Therefore, it is essential to understand cross border disease transmission dynamics, movement patterns and the behaviour of cross border actors to apply appropriate cross border health measures (MohSS, 2016).

To date, travel and trade take place along a continuum which encompasses points of origin and destination; and the multiple pathways in between during movements (Lee *et al.*, 2021). Considering that movement takes place through various modes of travel, this indicates the diversity approach needed for border health management. All travel types allow for crossing of passengers, baggage, cargo, containers, conveyances, goods, and postal parcels which all in nature pose a risk of disease carrier and spread. Both short-distance and medium or long-distance movements (travel and trade) in and out of the country's jurisdiction need to be monitored (MoHSS, 2016). Kluge *et al* (2018) highlighted that knowledge of the source of an arriving movement is central to the prioritisation of border health measures.

An alarming concern is that a higher proportion of fast movements in a short period of time are a challenge in mitigating potential health risks. Traditional ways to verify travellers' medical

records and history of exposure and detect symptoms carried out at borders have become insufficient (Lee *et al.*, 2021). MoHSS (2016) addressed the same concern that mechanisms put in place to spot the emerging diseases and other public health threats at borders are weak in capacities. The role of road, air, and sea movements in the rapid translocation of infectious diseases is a genuine concern (Roohi and Wilson, 2012). Several studies have revealed that the development of IHR 2005 is a sign that the global health community has long been concerned about the international spread of disease (Kluge *et al.*, 2018; Davis 2020; Lee *et al.*, 2021). This concern aroused more after the anthrax bioterrorism incident in the United States of America, the worldwide spread of (SARS) in 2003 and the emergence of H1N1 avian influenza (Merril *et al.*, 2017). Such incidents have stoked fears about the possibility of severe emerging and spread of pandemics.

Other observations would seem to suggest that cross border points could act both as a barrier and a medium for disease spread (Kluge *et al.*, 2018). Therefore, local and regional border authorities shall define, deliver and manage a range of activities that can make a positive difference in the utilisation of borders. Strengthening borders to detect, prevent and control diseases is a crucial effort of public health preparedness and response. Lee *et al.* (2021) have argued that border health security can be achieved through collaborative efforts of stakeholders and partners, including both private and public entities.

Innovative techniques to reduce cross-border health risks should be prioritized and enforced (Krincher, 2012). The current uncertainty is on which domestic and international measures that can be enforced in order to achieve a high level of border health security. Close coordination between the health system and non-health agencies is an alternative approach that is gaining momentum (Roohi & Wilson, 2012). Lee *et al.* (2021) acknowledged that close coordination has received much attention, during the early stage of COVID-19 pandemic.

2.5 Proposed response and preparedness measures

A recent review of the literature by Douglas and Staundenmaier (2020) found that a health emergency declaration or a recommendation by WHO can boost public health preparedness and

response actions, funding, and resource provision to prevent and reduce the international spread of diseases. The researchers hypothesised that borders need to be alert, prepared, and respond accordingly to health threats. More recent evidence has proposed that the world at large must be vigilant and ready to respond to new emerging diseases from unknown sources (Lee et al., 2021). Other studies such as that of Kirchner (2012) suggest that effective public health measures and response capacities at entry points, such as airports, ports, and ground crossings, are integral to health emergency preparedness and response systems.

Kluge *et al.* (2018) encouraged governments to adopt the IHR by developing and maintaining routine and emergency capacities, response plans and operating procedures at designated points of entry. Governments should be able to sustain investment and institutionalised preparedness and response activities. Many experts including Mullen *et al.* (2020) believe that working towards an embedded and closer relationship between the IHR and national health systems while improving border health capacities is essential for public health preparedness and response. A recent analysis showed that when the IHR is fully transposed into federal legislation, all hazards regarding cross border would be addressed (Lee, *et al.*, 2021).

However, a persistent question which is supported by Durrheim *et al.* (2020) is whether IHR could be transposed into national legislations without discrepancies in all the states. Responding to such a question requires that the adoption of IHR put concerted emphasis on the application of roles required from various disciplines within the border health services in the national laws of interconnected countries. Nevertheless, cross border health measures should be a cumulative discipline from a network of members such: Environmental Health Services, Public Health Medicine, National Ambulance Service, Health Surveillance; and IHR National Focal Point and Emergency Planning committees (Roohi & Wilson, 2012).

The acknowledgement of preparedness and response as a multidisciplinary approach is very nascent in existing literature. Such efforts warrant collaboration with the Health Department in collaboration with relevant stakeholders such as the ports authorities, airports authorities, governments, other departments of health, trading agencies, transportation and tourism agencies (MoHSS, 2016). Dickens *et al.* (2020) expressed that application of cross border health

measures would be a fight against the spread of cross border diseases. This notion was proved after lockdown and movement restrictions were made in Wuhan, China, where SARS-CoV-2 originated. The movement restrictions significantly prevented a further spread of COVID-19 within China and beyond by 77% (Dickens *et al.*, 2020). Travel volume was reduced and subsequent seeding of infection elsewhere. In the mid-year of 2020, there were accompanying travel restrictions and lockdowns almost in every country, contributing to epidemic containment. Dickens *et al.* (2020) illustrated again that modelling showed that a complete travel ban reduced COVID-19 cases importation by 86% in Australia.

2.6 Scope of border health measures

During the adoption of IHR 2005 by the World Health Assembly in 2005, States Parties of WHO agreed to develop, strengthen, and maintain public health core capacities for disease prevention, surveillance and response at designated points of entry (WHO, 2015). IHR assigned the World Health Organization to publish, in consultation with States Parties, guidelines on the development of public health preparedness and response measures. IHR further assigned the establishment of competent authorities responsible for implementing and applying health measures with a tender role at airports, ground cross, and ports. Using an active approach, WHO expected responsible border health authorities to prepare and respond to events that pose a risk to public health (WHO, 2015).

There have been discussions that public health response is about identifying global public health events, controlling them, and preventing further spread (Tang, 2015). Despite IHR regulations acknowledging the actions that could discourage the spread of diseases by enclosing and containing outbreaks at the source of origin, there is still a need for all susceptible areas to be vigilant against exporting and importing of infectious diseases. It is not always possible for a disease to be fully contained at the source or origin; however, the destined zone should adopt different event management processes at cross borders. These processes should include activities of event identification, verification, risk assessment, public health response, monitoring and evaluation. Adoption of event management processes should discourage the application of measures that cause complete disruption and restrictions to movements (Lee *et al.*, 2021).

IHR 2005 requires nations and respective authorities to be transparent with information about disease outbreaks. PoE should play a significant role in providing information to travellers and sectors that influence travel and trade. PoE should inclusively express how to manage various health events and describe expected health measures to be applied. According to MoHSS (2013) health measures applied at PoE in Namibia include health declarations, gathering information for contact tracing, passenger screening, developing surveillance facilities, liaison with different stakeholders, cargo inspections and licensing of roles of different stakeholders.

2.7 Negative impacts of disease importation

International movement increases the geographic impact of disease spread (WHO, 2015). When Ebola emerged in 2014, within weeks, the epidemic had inconspicuously spread across borders from Guinea to Liberia, Sierra Leone, Senegal, and Mali and through air travel to Nigeria, Spain and the United States of America (Merrill *et al.*, 2017). Further, Lee *et al.*, (2021) echoed that COVID-19 pandemic is the most serious global health crisis since 1918 Spanish influenza. This pandemic differed from past outbreak episodes, as it is being witnessed to be spreading faster and more fatally. The pandemic has affected the societies and the economies of countries, including Namibia. The pandemic reflected potential effects of disease transmission and importation as well as reduced activity of all socio-economic sectors.

Imported diseases can further spread within the country, causing increased morbidity and mortality rate (Lakatos, 2020). Disease outbreaks can lead to other socio-economic issues such drop in employment, rise in the cost of trade imports, drop in tourism and an increased cost of living. Persistence of infectious diseases may provoke economic decay, political destabilisation and social fragmentation. Disease outbreaks have led to the interruption of traffic and trade and the overutilization of available minimum resources. The way of living has not been the same since the COVID-19 outbreak as schools were closed, many businesses shut down and fear of uncertainty spiked the public.

2.8 Key elements of preparedness and response

Public health preparedness and response is the competence of the public health institutions and health care systems, societies and or individuals, to prevent, protect against, urgently respond to, and recover from health threats (Tung, 2015). Preparedness are pre-emergency activities undertaken within the context of disaster risk management and is based on sound risk analysis. Some researchers suggest that these activities should include developing and enhancing institutional structures and plans that define measures to safeguard life and assets. Preparedness is about setting actions and standards to face imminent threats or an actual disaster (Nelson *et al.*, 2007 and MoHSS, 2013).

Dickens *et al* (2020) is of the opinion that some health measures can carry significant limitations. While most cross-border health measures partially detect cases, and others bring substantial resource implications, or partially or entirely disrupt travel and trade. Nelson *et al.* (2017) expressed that the concern is not that there is no preparedness plan, however, clear goals for the preparedness efforts are not set, which has resulted in ambiguous preparedness actions taken. Lack of agreement on what measures should be aim at and how to apply them has attributed to a lack of accountability in implementing activities that produce desired results (Lee *et al*, 2021).

Moore & Dausey (2015) argued that preparedness measures vary depending on the disease and implementation has shifted across agencies from year to year. It became apparent during COVID-19 that cross-border health measures can be perplexing, overlapping, confusing and contradicting (Lee *et al.*, 2021). This could be conferred by articulating the standards required across various sectors and identifying key elements that characterised practical efforts. In the Namibian context, health response involves providing emergency services and general help during or immediately after an emergency to safeguard safety, save life, reduce health effects, and meet basic needs for the people affected (MoHSS, 2013).

2.9 Summary

Border health management and influence of implementing border health measures is the matter that caught attention of many public health researchers. This chapter described the nature, concept and scope of preparedness and response measures at cross-border points as expressed in various literature. Various sub-topics emerged during the literature search, and were discussed to get a clear understanding of the thoughts on cross border preparedness and response measures. During the review researchers highlighted an alarming concern about multinational spread of diseases which could be curbed by employing specific cross border health measures. However, there are Influencing factors that challenge a smooth implementation of cross-border health measures. In the same note literature proposed that developing a clear terminology and definition is critical to advance cumulative knowledge, shared understanding, and scientific evidence on the use of border health measures during pandemics.

Chapter 3

Research Methodology

3.1 Introduction

This chapter sets out to describe the approach and procedures utilised in conducting this study. The chapter also provides the sequence of steps followed to respond to the research questions and research objectives. Furthermore, the chapter gives an insight into the research design followed during various stage of the study. The study adopted the qualitative approach to meet the following objectives:

1. To determine preparedness and response measures in combating the importation of infectious diseases at points of entry in Walvis Bay, Namibia
2. To identify socio- economic factors that influence the effectiveness of cross border preparedness and response measures at entry points in Walvis Bay, Namibia.
3. To determine institutional factors that promotes effective implementation of port health services in Walvis Bay, Namibia.

3.2 Research Design

An exploratory, descriptive cross-sectional study using participant observation, key informant interview and focus group discussion as instruments of data collection was conducted. According to Ndjitaviua (2020) a cross-sectional study is considered a best study design to yield results with reference to the occurrence of an event in the population at risk. This approach was selected because it was regarded as a systematic method that could evaluate implemented cross border health activities with the ultimate aim of assessing the existing response and preparedness measures of preventing the spread of diseases at cross border points in Namibia. This descriptive study investigated the implementation of cross border measures in Namibia using a case study of Walvis Bay.

3.3 Study population

Walvis Bay health district in Erongo Region was the chosen study area. The region is having two (2) points of entry (the airport and harbour) which are both in Walvis Bay health district jurisdiction. The two borders are 15 km apart. The researcher considered both points of entry for the study to determine their relation in health response. The population of this research study consisted of two categories:

Category 1: Staff from the health sector (port health staff that implement cross-border health measures and emergency response staff that support implementation of port health services and other response program at a regional and district level district.

Category 2: Non-health staff and border control officials and other points of entry operators.

The targeted population for the study were employees from mapped stakeholders working directly or giving support for the harbour or airport operations. Stakeholders mapped for the study included: Ministry of Health and Social Services (MOHSS), Customs and Excise, Namibian police, airlines and shipping liners, Ministry of Home Affairs and Immigration, Namibia Airport Company (NAC), Namibia Port Authority (NAMPORT), Walvis Bay Municipality, Ministry of agriculture and business community operating within the jurisdictions of points of entry, ground handling or clearing agents.

3.4 Sampling techniques

Etikan, Musa, & Alkassim (2016) describe a sample as a subset of a population that is used to represent the entire group. The study adopted a non-probability sampling method and specifically employed a purposive sampling technique. Purposive sampling is one of the most sampling methods suitable for conducting qualitative research (Ames *et al.*, 2019). Purposive sampling provided the researcher with a sampling strategy for the selection of relevant participants (in this study participants were port health officials, PoE response staff, and PoE non-health border control official and other stakeholders). The study purposively enrolled the participants in the study in order to explore the attitudes, perceptions and values of public health

preparedness and responses at the points of entry. Participants were selected based on the following judgments (inclusion and exclusion criteria):

Inclusion criteria

- Port health staff providing port health services within Walvis Bay health district.
- Non-health border control officials and stakeholders providing direct and support services within Walvis Bay entry point's jurisdiction.
- Points of entry response staff working for the Ministry of Health and Social Services who directly or partially supports the implementation of port health services at district or regional health level.
- Non-health border control and stakeholders that had experience with airport and harbour operations.
- Participants mentioned above, both women and men over the age of 18.

Exclusion criteria

- Staff and stakeholders that has less than three (3) months of experience of working or operation within points of entry jurisdiction.

3.5 Sample size

The sample sizes for the study area were nineteen (19) staff from health sector and twenty-nine (29) employees from non-health sectors and agencies. According to Van Rijnsoever, (2017), in qualitative studies probability sampling and sample size calculation is not necessary because data is not always intended to be analysed statistically. The researcher collected data until saturation was reached for fifteen (15) key informant interviews and three (3) focus group discussions (n= 28). Focus group discussion sessions comprises of six (6) participants in session one (1) with port health staff, ten (10) participants in session two (2) as representatives for regional emergency response pillars and twelve (12) participants in session three (3) as staff representing

stakeholders at entry points. All the group discussions and interviews were conducted in Walvis Bay.

Table 2.1 Participants' matrix

Activity	No	Total number of participants
Focus Group discussions	3	28
Interviews	15	15
Overall total	18	43

3.6 Data collection procedure and methods

Three research instruments were developed to collect data, namely interview guides for focus group discussions (FGDs) and key informant interviews (KIIs) as well as an observation checklist. According to Mishra (2016), in focus group discussion, researchers are required to obtain detailed information from a small group of knowledgeable respondents about the subject of interest.

The researcher held a focus group discussion with 6 port health officers employed under port health services in the Erongo regional health directorate. Another group discussion with 12 participants was held with non-health stakeholders for the two points of entry mainly represented by customs officials, clearing agents and ground handling agencies and two points of entry administration authorities (NAC and NAMPORT), immigration and port police. Views of ten (10) health professionals with different expertise in disease surveillance, preparedness and response; and those tasked to support the implementation of port health services within Walvis Bay district were noted during the third focus group discussion. Different views on key elements of cross border preparedness and response measures were discussed during these focus group discussions.

Detailed information was additionally retrieved during key-informant interviews with fifteen (15) participants. All participants for the FGDs and KIIs were from mapped stakeholders that operate at Walvis Bay airport. Furthermore, observations were conducted to assess practices, attitude

and other contributions made towards commitments in combating the importation of infectious diseases at Walvis Bay Airport and harbour.

Participants for the focus group discussions and interviews are summarized in Table 3.1 above. There were 43 participants who participated in the study. All of the participants identified themselves primarily with agencies they represented without necessarily describing the role they are engaged with.

3.6.1 Unstructured Interviews

To purposively enrol the target participants in the study, fifteen (15) unstructured interviews were conducted between the periods of 1st March 2021 to 15 April 2021. According to Blee & Taylor, (2002), key informant interviews should be performed to obtain crucial detailed information from the perspective of the respondent concerning an issue that the respondent view is important due to personal experiences. The study identified interviewees from PoE stakeholders. The researcher opted to include stakeholder personnel from distinct entities that operate within border jurisdiction, because it is believed that these stakeholders had personal experience in border management, which includes border health security. Participants interviewed during the study represented the following entities: Namibia Airport Company, customs and excise, airlines, immigrations, and security and cleaning company, ground handling company, Namibian Police and Port health department. Interviews were conducted face-to-face at the Walvis Bay International Airport.

3.6.2 Focus group discussion (FGD)

Focus group discussions were facilitated and moderated by the researcher between March 2021 and November 2021. The FGD was used to investigate shared understanding, practices and experiences encountered during preparedness and response practices. Participants for the focus group discussions were both health and non-health staff that administer border control and management or cross-border logistic operations. Approximately 40 to 45 minutes of time was set aside for each focus group discussion to allow productive participation of individuals. A set of pre-determined questions were used as guide for the focus group discussions. Follow-up

questions and targeted probing were made during discussions to stimulate opinions, value remarks and recondition ways of participants sharing information in an amicable manner.

3.6.3 Participant Observations

During the period of April 2020 to August 2021 participant observations was conducted. According Kawulich (2005) the researcher can integrate herself in the study population by watching behaviours, events, practices and review of documents (SOP, policies, guidelines and legislations). Observations were made during the daily performances at Walvis Bay boarder post. Data collected during the study was reported based on the researchers' personal experiences. Observations made during the study using observation checklist included the mapping of preparedness and response activities; and identification of experts from both health and non-health sectors and their active role in response.

3.7 Data analysis

Views by different participants were compared during the data analysis of this study **Key informant Interviews (KII)** - Response notes were read to gain understanding of the content and to acquire a sense of the data in relation to the objective of the study. Inductively, themes and codes related to those developed from FGD were assigned with the purpose of comparing major thoughts between the participants. The data was imported into ATLAS.ti-9 software and analysed. Data were coded based on the IHR cross border core capacities requirement (Annexure 1). The themes used were created from the key element of cross border health measures that are defined in other studies including the contribution of Lee *et al*, (2021).

Focus Group discussion (FGD) – An inductive content analysis method described by Moretti (2011) was conducted to derive themes directly from the raw data. Firstly, the researcher examined the essential content of the notes taken during FGD, for proportion of words used by the researcher and participants. Secondly, the FGD notes were coded thematically using Atlas-ti software. The thematic analysis involved application of a set of codes to all notes to examine how themes were debated between groups of participants (Woodyatt *et al.*, 2016). The codes were compared across notes in terms of their presence within each of the FGDs and in relation to the

common opinions. The analysis of these focus group discussions offered insight into staff's perceptions on cross-border preparedness and response measure.

Observation- Observation data were presented as field notes. Described notes were compared to the themes and codes generated during FGDs and were assigned correspondingly. Fundamental elements, principles, tasks and features noted during observation were assessed based on study objective and questions.

3.7.1 Establishing Trustworthiness (credibility, transferability, dependability, and confirmability) during the study

According to Kriukow (2020) transferability, dependability, confirmability and credibility in qualitative studies often is being threaten by researcher bias, reactivity and respondent bias. To overcome these threats, the researcher has applied the following strategies:

- To ensure credibility, the researcher had spent a period of more than a year within the study environment and with the studied participants to reduce the reactivity threat and responded bias.
- To further establish credibility- Data was triangulated after it was collected utilising different instruments to reduce reactivity, as well as researcher and respondent bias.
- To ensure confirmability - Peer debriefing and support: Progress reports were presented to the supervisors who in turn provided valuable feedback, academic critics and suggestions for improvement, thus to minimise the research bias.
- Dependability was exercised by: Data collected from a single participant, that do not match the patterns emerging from the rest of the data were analysed, thus to minimise researcher bias.
- Dependability was also ensured through: Monitoring and keeping a record of all the research-related activities and data, including the raw interview notes and the researcher's diary was done.

Furthermore, to ensure transferability of the study: The study methodology describes adequate details on the site, participants and methods or procedures used to collect data during your study. Verification, constant data comparison, comprehensive data use, and use of tables were also employed during data analysis. Additionally, the researcher used a well validated Atlas -ti version 9 qualitative data analysis software.

Main features of the Atlas-ti software used during analysis were:

- Project- this feature was about creating the file in the software with imported and generated data relevant to the study and that data was analysed to produce the result of the study.
- Documents- All the data collected during the study: notes and documents were added or imported into the project that was created in the software and these were used for analysis
- Quotations- Frequent appearing fragments in the data (imported documents) were marked as a description to the generated themes and codes. These descriptions were mainly used during interpretations and discussion of the study results.
- Codes: Common fragments in data were rephrased into terms, meanings and description referred as codes in the study. These are identities that explain the data in relation to the objectives of the study.
- Groups: documents and codes generated in software were group based socioeconomic characteristics, institutional factors and processes or activities performed at the points of entry.

Moreover, the thematic analysis was performed in three phases as described by Nojavan (2018): first phase (pre-analysis), second phase (material exploration and treatment of results) and third phase (interpretation).

- Pre-analysis - involved full reading of the documents before data is imported in the software. All the data from observation, interviews and focus group discussion were considered.

- Material exploration - in order to reach the central point of understating of the data, codes were created in context with the research objectives. A label in a form of a word or a phrase that synthesises the main idea was assigned as a code to the fragments of selected data. Main ideas contained in various responses were given a set of similar codes.
- Interpretation - In this phase the researcher queried the coded data according to the research objectives. The raw data were processed and established in results of figures, diagram and tables therefore descriptive assumption were made.

3.8 Ethical considerations of the research

Aku-Akai (2020) expressed that conducting research implies the acceptance of responsibilities. Since a researcher is responsible to participants, to fellow researchers and the society in general, a high professional standard was highly maintained during this study. The following ethical principles were considered:

3.8.1 Authorisation

The researcher sought permission to conduct the study from the Namibian University of Science and Technology's (NUST) High Degree Committee and the Ministry of Health and Social Services (MOHSS) ethics committee. Permission was verbally requested from the participants or through their supervisors to participate in interviews and focus group discussions.

3.8.2 Rights to autonomy and self-determination

All study participants were regarded as autonomous beings. Independent individuals acted intentionally, with understanding, and their influences were not controlled. Participants had self-determination and abilities to make informed decisions to participate. The concept of autonomy reinforces the right to be free from unwanted interference that is associated with legal justifications for curtailment of that autonomy (Aku –Akai 2020).

3.8.3 Rights to confidentiality and privacy

In this research the information gathered from participants was treated with confidentiality. The data obtained during the study was used merely for the purpose of the study. The right to participants' privacy was explained and reserved. The researcher prioritised making sure that identification of any participant was neither revealed nor shared without his/her permission. Thus, principle of anonymity was adhered to by blind copying participant responses, and no names of participants were revealed or mentioned throughout the study.

3.8.4 Rights to informed consent

The researcher read to all participants' relevant information about the research purpose and procedures of the study. Data collection was done after informed consent was verbally obtained from the participants. This was done in line with acclaimed international ethical considerations including the guiding laws and regulations of research subject protection.

3.10. Summary

This chapter covered the research methods and tools employed and approaches followed during the study. The study design, study area, study population, sampling process, and sample size and data collection methods used in the study were described. Additionally, data collection instruments and data analysis techniques used in the study were also outlined in this chapter. Finally, limitation encountered in the study and the ethical considerations related to this study were presented. The study findings and analysis are discussed in the next chapter.

Chapter 4

Study results and analysis

4.1 Introduction

This chapter presents the study results based on the study aim and objectives. The participants' perceptions on the implementation of cross border health measures at Walvis Bay that could assist with effectively combating the importation of cross border communicable diseases were explored through this study. The outcomes of the study determined the factors that deterred the effective implementation of cross border health measures considering the capacities, existing skills and different aspects utilised for cross border health management. The findings were transcribed verbatim and thematically grouped in 4 main themes and 253 quotations were assigned to one of the 42 sub-themes generated and were related to various preparedness and response measures at cross-border points which are then considered as subjects of these themes and sub-themes.

4.2. Presentation Qualitative Findings

The outcome of study findings imported to and analysed using Atlas-ti version 9 are presented below by thematic area in tables, figures and direct quotations as appropriate.

4.2.1 Demographic characteristics of participants

A total of fifteen (15) key informants with an average age of 51 years were interviewed, while three (3) FDGs were conducted with the average age of discussants being 35 years. Table 4.1 shows the demographic characteristics of the study participants.

Table 4.1: Demographic characteristics of key informants and focus group discussants (n: 43)

Demographic Variables	KIIs	FGDs
Age (years)		
20-30	3 (20.0%)	7(25.0%)
31-40	8 (53.3%)	12 (42.9%)
41-50	4 (26.7 %)	7 (25.0%)
>50	0 (0.0%)	2 (7.1%)
Total	15 (100%)	28 (100%)
Sex		
Female	9 (60%)	19 (67.9%)
Male	6 (40%)	9 (32.1)
Total	15 (100%)	28 (100%)
Work Experience (years)		
01-05	7 (46.7%)	-
05-11	5 (33.3%)	-
12-16	3 (20.0%)	-
>16	0 (0.0%)	-
Total	15 (100%)	28 (100%)
Job category		
Supervisor and managers	2 (13.3%)	6 (21.4%)
Non supervisor	13 (86.7%)	22 (78.6%)
Total	15 (100%)	28 (100%)
Department of service		
Port health department	2 (13.3%)	8
Non -health sector	13(86.7%)	16
Total	15 (100%)	28
Role in emergency		
Emergency response staff	1 (6.7%)	3 (10.7%)
Non-emergency staff	14 (93.3%)	25 (89.3%)
Total	15 (100%)	28 (100%)

All participants have worked for their agencies for more than one (1) year.

4.2.2 Breakdown of the different themes

The following four (4) themes as presented below in Table 4.2 were extracted from the study in the context of entry points at Walvis Bay, Namibia. A total of 253 quotations were assigned to

the 42 sub-themes generated based on various preparedness and response measures at cross-border points.

Table 4. 1 *Main themes emanated from qualitative interviews*

Theme 1	Cross-border preparedness and response capacities required at entry points
Theme 2	Measures to strengthen cross-border health measures.
Theme 3	Preparedness and response measures in place to combat the importation of diseases.
Theme 4	Adherence to preparedness and response measures.

In Table 4.3 sub-themes that were extracted from the study is present below.

Table 4. 2 Sub-themes emanated from the study

Main - Theme	Sub-themes
Cross-border preparedness and response capacities required at entry points	Diagnostic facilities; Equipment'; Staffs; Transport capacities; Logistic supply; Medical facilities/premises; Medical services; Isolation/quarantine capacities; Laboratory capacities; Private sector roles, Use of new technologies; Validation Systems; reporting of notifiable diseases
Measures to strengthen cross-border health measures.	Training/Skills; New technologies; Communication; Control; Coordination; Meetings; Tools for communication
Preparedness and response measures in place to combat the importation of diseases.	Response efforts; Response pillar; Risk assessment efforts; Risk communication; Risk/hazard detection; Preparedness efforts; Types of disease importation; Inadequate facilities, Infection control practices, influencing factors e.g., political, environmental, human behaviour factors, Inspection capacities, contact tracing capacity
Adherence to preparedness and response measures.	Challenges; Legislation/policies/Regulations/Guidelines;

	Mechanisms for plan activation to be put in place, designated spoke person, formulate working condition/plan; Effectiveness; Improvement/achievement; Response pillar; Response efforts; Influencing factors
--	--

The discussions below are made in relation to the above themes:

4.3. Theme 1: Cross-border preparedness and response capacities required at entry points in Walvis Bay, Namibia

The study findings suggest that majority (40%) of the participants agreed on existing practices such as regular meetings, coordination between different entities, communication, use of technology, use of appropriate equipment, risk communication and incorporation or recognition of private sectors. Figure 4.1 illustrates pillars or strength of support for an effective cross border health program below.

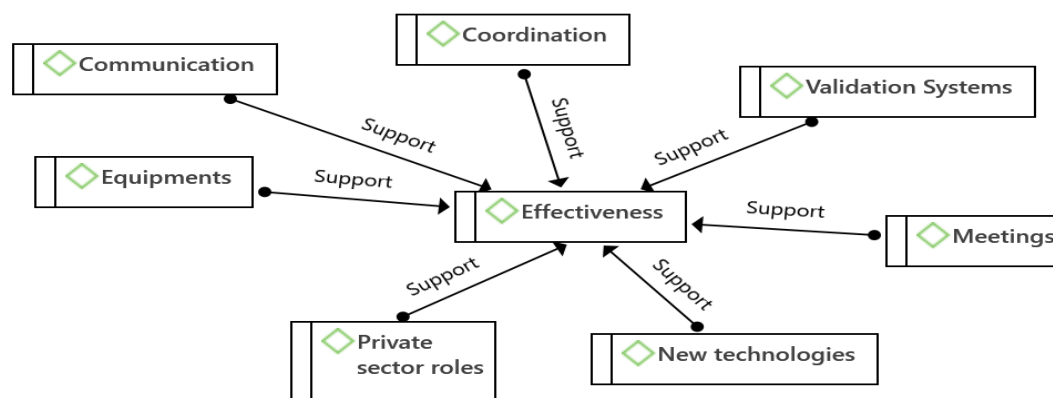


Figure 4. 1 Pillars that supports effective program implementation

The main idea in these codes is described as follows:

- **Communication** – The use of various types of communication media may enable stakeholders at entry points to successfully implement cross-health measures program.
- **Coordination** – Participating actors at the cross-border points with different views, resources and skills have to coordinate their relationship and modify their activities so that together they may provide better services.
- **Validation system** – The main idea in the three responses in the study was that every system of operations needs validation plans that outlines whether activities being

implemented will satisfy the need. Validation is about confirming that the adopted program effectively achieves its intended purpose. Furthermore, the participants made recommendations in their response for all stakeholders to look into whether the country has built the right cross-border preparedness and response system to ensure no disease importation into the country.

- **Meetings** - Together with coordination and communication, regular meetings with tangible action items between stakeholders are required for organizing improvements of systems and operation as well as to change negative practices' culture.

These findings are highlighted by some of the direct quotes from the various participants below:

Data elicited from focus group discussions:

"There is excellent coordination between different stakeholders operating at the points of entry. All the border control authorities notify each other when there is a concern that needs special attention from each control body", R1.

"Stakeholders held facilitation and updates meeting on pre-arrival of foreign vessels regularly where a representative from each stakeholder operating within the harbour attends. The airport also holds facilitation meetings monthly. They make reviews on challenges encountered during operations and suggestions on how to address them during these meetings. However, it has been a challenge to hold this regular meeting since 2020 because of COVID-19 restrictions", R2.

Data elicited from key informant interviews:

"All border control authorities were supposed to work together to identify and report cases accordingly. By law, all the suspected infectious disease cases were supposed to be reported to the health officials", P5.

"The airport authority does regular sensitization meetings to encourage all stakeholders to report all incidents to relevant authorities," P2.

Data elicited from observation:

The researcher observed that once the event is confirmed at entry points, health authorities liaise with regional/national level authorities to receive guidance on common positions on what information is delivered to the media. It was also observed that despite well-established national and regional centrally coordinated information protocols, media personnel usually approach points of entry, district and/or regional level staff to get first-hand knowledge.

Furthermore, more than 60 responses (24%) highlighted either that the public health systems at the border can be further improved by formulating an operational plan and ensure that mechanisms for plan activation are put in place which should be further supported by legal frameworks. Figure 4.2 below illustrate the influence of policies, plans and working procedures to an effective cross-border health program.

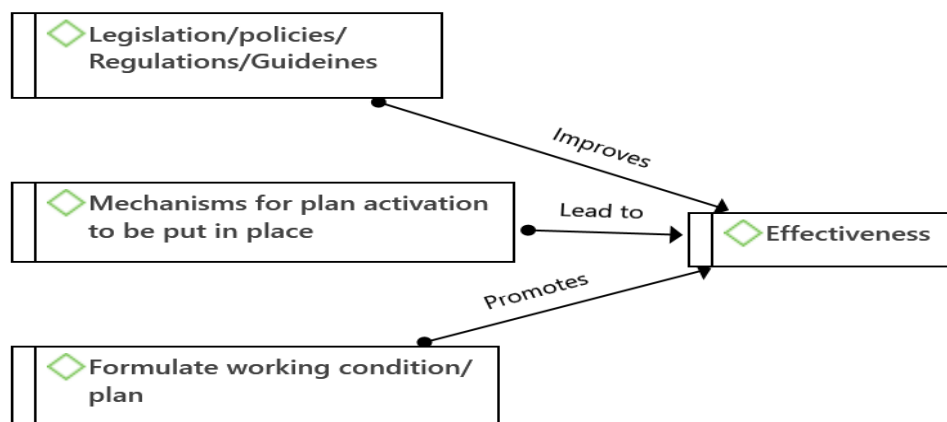


Figure 4. 2 Influence of policies, plans and working condition on effectiveness

Some participants highlighted that inadequate policies, operational capacities and lack of specified roles in the policies have challenged the implementation of preparedness and response measures at Walvis Bay's entry points. Although the analysis did not quantify the severity of challenges that have hampered the rendering of port health services, nineteen (19) responses (7%) cited that the formulation of detailed operational plans can improve the implementation of port health services.

The study also revealed that the type of movement (such as trade and travel) can influence the type of capacities at the different types of cross-border points that has the potential of rendering

health services required. For example, the researcher observed that port health services in Walvis Bay health district are more on control of trade movement at the harbour compared to the airport that mainly control travel movement. Table 4.4 listed regions with points Namibia of which many are ground crossing border points.

Table 4. 3 Regions with points of entry in Namibia (MoHSS, 2016)

Region	Ground Crossing	Airport	Sea point
Erongo	-	Walvis Bay	Walvis Bay
//Karas	Noordewer, Ariamsvlei, Oranjemund, Klein Manasse,Veloorsdrift, Sinderlings drifts, Mata	Orandjemund, Luderitz	Luderitz
Kavango West	Katwitwi,Nkurenkuru,	Nkurenkuru	-
Kavango East	Muhembo, Sarangu	Rundu	-
Khomas	-	Hosea Kutako,	-
Ohangwena	Oshikango	-	-
Omaheke	Butepost	Gobabis	-
Omusati	Ruakana, Omahenee	-	-
Oshana	-	Ondangwa	-
Zambezi	Ngoma, Wenela, Kasika,Impalila Island	Katima Mulilo	-

Types of challenges encountered at Walvis Bay cross-border points

Below is a list of challenges retrieved from related quotations made during the study:

- **Lack of stakeholder’s collaborations and lack of review on the operational plans**

One participant remarked that *“the stakeholders' roles for inspecting cargo of imported goods at harbours are not clearly defined and activities of different enforcement teams are sometimes overlapping. You can find three or more different inspecting bodies doing one inspection, but they all look at the same criteria”, R3.*

- **Lack of diagnostic facilities and capacities**

Another participant was of the opinion that *“Our local laboratory’s capacity is minimum and inadequate. For example, there are no testing facilities or laboratories at entry points. Whenever there are specimens that need be analysed, we have to use the inland laboratories or ask for help from the neighbouring countries. We are hearing about a new variant for COVID-19, can our labs conduct test on these variants”* R3.

- **Delay or inadequate logistic supply**

With regards to delay or inadequate logistic supply, a group discussion participant had the following to say: *“Equipment is usually imported or requested from the national level. Equipment is not always readily available on time at the early stage of response”* R1.

- **Lack of implementation of policies and guidelines**

“Challenges in implementing policies have not been a concern in the past because we did not have a real-life encounter with vast pandemics like we encountered during the COVID-19 response” as remarked by one participant. Another participant revealed that *“although national health regulations are available, one will say we were caught unprepared during the COVID-19 response because we didn’t have enough response resources and facilities”*, R2.

- **Lack of quarantine and isolation facilities**

One participant mentioned that *“the community never had designated isolation facilities until we realized during the COVID-19 response that we needed one, R2.”*

- **Relaxing of response measure due to non-existence of health threat over a period of time**

In terms of the non-existence of health threat, one of the key informants were of the opinion that *“when there are no pertinent ongoing health threats, resources are diverted to other programs, which could be why border health management is prioritized less”* R2.

- **Failure to legislate the role of private sectors in preparedness and response**

Furthermore, one of the interviewees indicated that the role of private sectors was not clearly outlined by saying that *“It has come to light that they did not recognize stakeholders, including*

private and business sectors in the past, although they have become the pillars of response against COVID-19” R4.

- **Lack of control over internet and social media information dispensation**

Interestingly one of the participants remarked that *“social media and the internet have been destructive tools, where the public is spreading conspiracies and lies on such platforms,” R2.*

- **Lack of resources provision and lack of enough staff during response to outbreaks**

It was also revealed that lack of resources remains a great challenge as revealed by another participant: *“a great shortage of resources and staff was experienced during the COVID-19 response,” R2.*

- **Inadequate capacities to respond to various infectious disease and health**

In response to readiness to various infectious diseases, a participant highlighted as follows: *“we appreciate the progress towards COVID-19 response but what about other diseases such as Ebola and yellow fever that we have been hearing? What we need to assess is whether our laboratories capacities will be able to analyse all the special pathogens that are likely to be imported through the arriving travellers,” R4.*

Another one remarked: *“about special specimens we have to specify which pathogens are of interest at the moment because we have to consider the resources that we have at hand,” R4 .*

- **Failure to optimize expertise needed for response**

On the question whether additional expertise is required, a participant said: *“however, we fail to optimize our expertise,” R2.*

- **Lack of relevant regulations to prevent cross border disease transmission and importation**

In terms of relevant regulations to prevent transmission and importation of cross border diseases, another participant exclaimed as follows: *“current regulation does not have a proper guidance on arrival of foreign vessels including passenger vessels,” R2.*

- **Lack of regular updating and dispensing of information on internet and public authority's websites**

Another participant highlighted challenges regarding information dissemination as follows: *"MoHSS does not update regularly all the health information on their website or their social media accounts," R1*

- **Lack of systemized data capturing tools and validation systems**

A participant indicated that data collection tools were not streamlined or validated in a unified fashion. The following was said: *"we do paper based and manual data reporting of our daily activities," R4.*

- **Lack of understanding on disease transmission among stakeholders**

"There is no reliable way to detect cases such as for COVID 19 because until now many people do not understand how corona spread," P12, says one participant in terms of the stakeholders' understanding of diseases.

- **Lack of screening facilities at the airport**

Screening facilities at the airport was also considered a challenge as indicated by one participant: *"no, because we do not have enough screening area in the terminal, and when passengers arrive in the terminal, they come as a group," P4.*

- **Improper use of PPE, bad habits and negative human behaviours**

Another participant remarked that: *"I understand people need to be fully protected by wearing full PPE, but port health staffs haven't been wearing full gear when they are screening except for the masks," P3.*

4.4. Theme 2: Measures to strengthen cross-border preparedness and response efforts

Over a hundred and forty four (144) cumulative codes out of two-hundred and fifty-three (253) codes assigned, recognized existing capacities that need to be improved in order to strengthen and promote cross-border preparedness and response measures. Among these capacities include reporting of infectious diseases, suspect case identification, isolation/quarantine

capacities, infection control practices, inspection skills, risk assessment, staff's provision, communication, coordination and contact tracing capacities. The following table represents the number of responses made on some of the existing cross border health capacities:

Table 4. 4 Existing cross border health capacities that need to be strengthened- Walvis Bay, 2020 -2021

Cross border health capacities	Number of responses
Communication	14
Contact tracing	10
Coordination	18
Infection control practices	10
Inspection capacities	6
Isolation/quarantine facilities	17
Private sector role	7
Reporting of notifiable disease	16
Risk assessment	13
Suspect case identification	13

About eighteen (18) responses made by participants were encouraging stakeholder coordination as a capacity required for health response and preparedness. Reasons given by participants why quarantine and isolation capacities need to be strengthened were in consideration of the following factors as the study revealed a high number of exposed and infected travellers, varying incubation period of various infectious agents, lack of capacities for medical services, lack of transport services and laboratory capacities. The concern that arises from the study is that there is lack of finances in public health sector to improve cross-border health capacities and that the role of private entities is not clearly defined in the national policies. Private sector entities influence the big component of travel and trade movement. Their actions in response and preparedness should be clearly defined and their role in implementing cross border health measures should be outlined.

Other response capacities not outlined on the table above are for example: use of appropriate equipment for screening of passengers and inspection of cargo, adequate staff provision and the use correct PPE. Equally these capacities should be improved and maintained to ensure continuous provision of cross border health measures.

The following quotations from respondents are an example of the above remarks:

Data elicited from Interviews:

“I think training on how to perform disinfection of surface should be conducted regularly. Apart from dusting, high touched areas should be disinfected periodically, but this practice is limited at our airport,” P5.

Data elicited from observations:

The researcher observed that the orientation and sensitization sessions have been conducted with different stakeholders operating within the points of entry during the early response stage for COVID-19.

Figure 4.3 below depicts the links of the network of codes of the interrelation of cross-border health capacities.

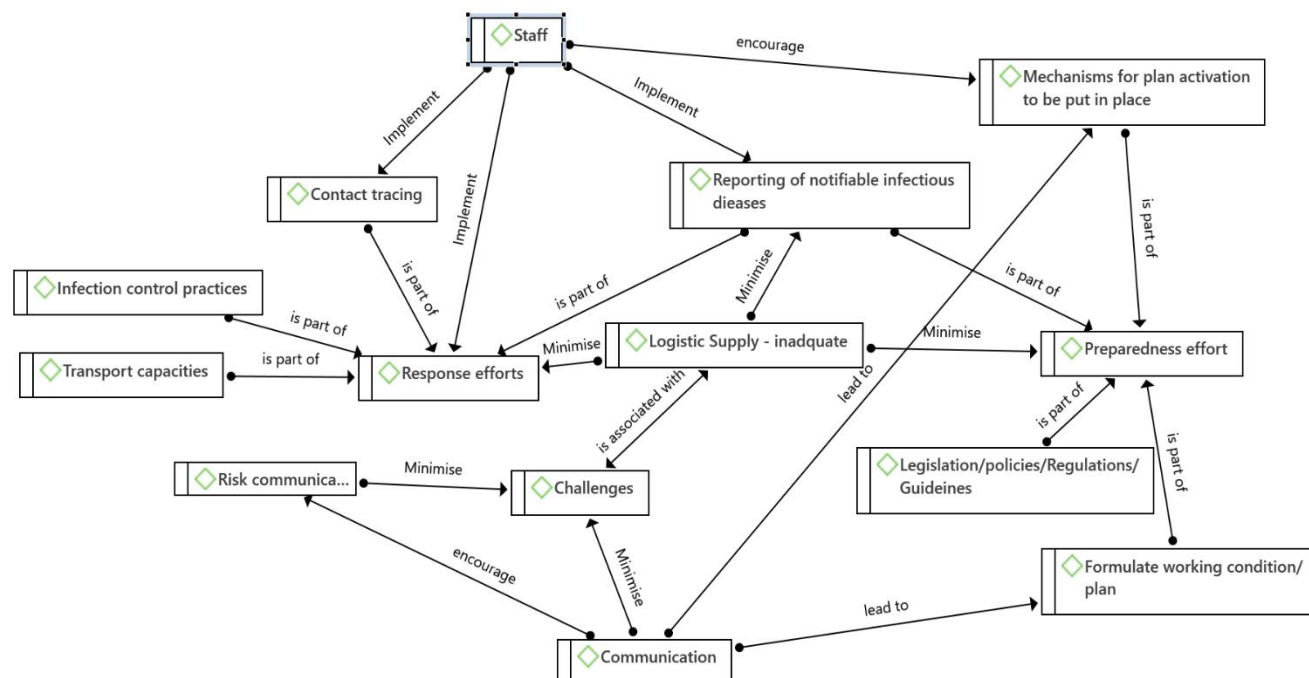


Figure 4. 3 Interrelation of cross-border health capacities

4.5 Theme 3: Preparedness and response measures in place to combat the importation of diseases

Results emerged from the study under this theme found that there is a broad range of cross border health measures applied by different regulatory authorities to control movement. Response efforts were acknowledged in twenty-three (23) responses made during the study compared to twenty (20) responses made about preparedness efforts. The study revealed medical, pharmaceutical as well as non-pharmaceutical interventions such as inspections and passengers screenings that are in place at cross border points in Walvis Bay. Observations made during the study revealed that there are port health officials that conduct inspection of goods, conveyances and screening of passengers.

Table 4.6 below matrixed relevant documents observed during the study that assists health officials to conduct inspection and risk assessment.

Table 4. 5 Documents required by port health officials during inspection

Travellers	Vessels	Aircrafts	Cargoes e.g., food, cosmetics, and other goods
Vaccination certificate, e.g., yellow fever vaccination;	Ship Sanitation certificate;	Fumigation certificate;	Fumigation certificate
Lab testing report, e.g., on COVID-19;	Fumigation certificate;	Passenger locator forms;	Export health/ phytosanitary/ veterinary certificate;
Exit screening report;	Maritime declaration of health;	Health declaration;	Analysis certificate;
De-isolation certificate;	Ports of calls;	Passengers/crews list;	Certificate of origin;
Import/export certificate and permit for human remains;	Crews/passengers list;	Disinfection certificate;	Temperature log form for reefer cargoes;
Bays permits;	Disinfection certificate.		Imports/export permits;
Traveling documents, e.g., passport/visa;			Customs declarations form;
Contacts information form and questionnaire.			Packaging list.

Nevertheless, 56% of the interview responses revealed that the main cross border health measures applied at Walvis Bay is non-pharmaceutical actions. Intervention such as isolation, quarantine, incident reporting, contact tracing, travel advisory and warning, restriction on movement, hygiene and safety check, decontamination, screening, inspection and application of precautionary protective behaviours were picked up from the comments the participants made during the study. Figure 4.4 below further reflect the network of non-pharmaceutical capacities that form part of regular efforts towards cross-border health preparedness and response

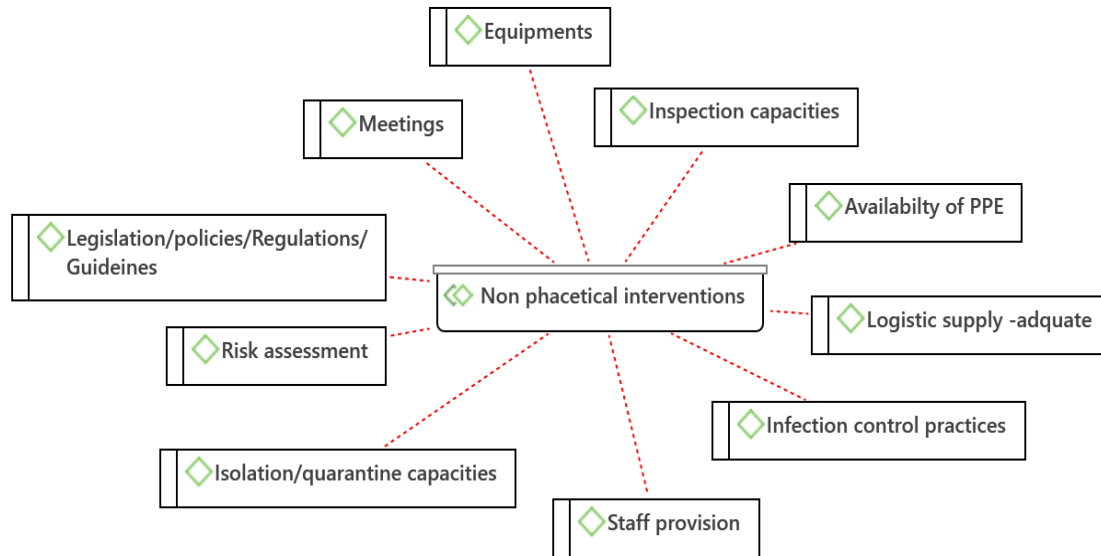


Figure 4. 4 non-pharmaceutical cross border health capacities at Walvis Bay

Legal frameworks exist which indicate specific roles and responsibilities for port health officials. However, respondents perceived networks to appropriate resources; health facilities, diagnostic facilities and partners are inadequate. Key existing cross-border health capacities were revealed in the study as follow:

- Eighty percent (80%) of the interviewees confirmed that transport services for ill travellers to and from appropriate medical facilities are available.

The following quotations from respondents are an example of the above remark:

Data elicited from focus group discussions:

“The public district’s ambulances services are utilized whenever there is an incident. However, there is no designated transport dedicated specifically for points of entry.”

“In some incidents, they requested private ambulances to assist.”

Data elicited from Key Informant Interviews:

“At the current moment, there is no specific designated transport for suspected ill travellers. However, arrangements are usually made for transport provision when there is an incident reported on board on aircraft.”

“Ministry of health can arrange for transport when is required.”

“Usually, when their illness was reported before the aircraft arrived; a private ambulance is arranged with the patient to the hospital.”

- Fifty-three percent (53%) of interview responses agreed that isolating the suspected case from other persons, patients, or staff is possible. One respondent commented as follows:

“We have been receiving some travellers that are referred for quarantine at self-home quarantine and isolation or mandatory quarantine and isolation in hotels. The Ministry of Health should indeed continue monitoring these isolations. It might be impossible to isolate all travellers at the points of entry now that’s why all travellers are referred for self-home or hotel quarantine.”

Observations made by the researcher during the study was that over sixty (60) approved hotels and accommodation facilities were repurposed to isolate and quarantine travellers in the district during the COVID-19 response.

- Ninety-three percent (93%) of the key- informants’ interview responses are with the perception that helps for contact tracing is given to public health authorities through identification of contacts by providing passenger lists, staff lists, crew list and terminal registers.

In terms of identification of probable or confirmed cases some respondents who were interviewed stated the following:

“Not sure how that was supposed to happen, but it is necessary to provide all information requested by health officials to help them in the assessment.”

“Contact identification is made by submitting passenger and crew lists to the health authority.”

“Yes, information that health authorities request is provided by the airliner and from the passengers themselves.”

- Sixty percent (60%) of participants responded positively that there are procedures in place to disinfect contaminated areas and equipment, for example, decontamination of luggage and conveyances.

The following quotations from respondents are an example of the above remark:

Data elicited from key informant Interviews:

“We came to know the disinfection of luggage only during COVID-19 and I see it was done only during the early stage when borders were opened up for movement.”

“Disinfection is necessary to keep the surface germ-free; it should be done regularly after the dusting is done. When it is believed that luggage is contaminated, it must also be disinfected.”

“Disinfection of baggage is costly, that's why it was done over a long period when it was instituted. However, to keep luggage must be disinfected.”

Further preparedness and response measures in place to combat the importation of diseases are recorded as follows:

About forty-six percent (46%) of the responses (117 quotations) were in support of coordination, isolation, staff provision and reporting capacities. The outcome highlighted the processes of cross border preparedness and response in a form of integration of the following existing capacities such as:

Table 4. 6 Capacities that are integrated to address cross-border health response and preparedness need in Walvis Bay

CAPACITIES	RESPONSES
Communication	14
Coordination	18
Formulate Working Condition/Plan	19

Infection Control Practices	10
Inspection Capacities	6
Legislation/Policies/Regulations/Guidelines	13
Logistic Supply –Adequate	3
Mechanisms For Plan Activation to Be Put In Place	28
Medical Facilities/Premises	3

As indicated earlier, the study findings under this theme revealed the availability of a broad range of cross border health measures which is utilised by various regulatory authorities to control movement of probable or confirmed cases.

4.6. Theme 4: Adherence to preparedness and responses measures at the points cross border points

Forty-nine to eighty percent (49% - 80%) of the responses were of the opinion that cross-border measures applied during the early stages of COVID-19 were incomplete and imperfect. In addition, fifty (50) responses suggested that the provision of cross border health measures is influenced by frameworks of social, economic, political, and environmental factors. Table 4.8 below present the proportion of responses made on factors that influence health measure at cross border point remarks.

Table 4. 7 Responses on preparedness and response efforts and the influencing factors on implementation of cross-border health services- Walvis Bay, 2020- 2021

Code	Responses / 253 codes generated	Percentage
Challenges	52	21%
Influencing factors e.g., political, environmental, human behavioral factors	9	3.55%
Legislation/policies/Regulations/Guidelines	13	5.13%

Logistic Supply - inadequate	8	3.16%
Preparedness efforts	20	7.90%
Response efforts	23	9.09%

There were about 20 and 23 responses made during the study on the existence of preparedness and response efforts. Despite confirmation on existence of implementation of cross-border health measures, 52 responses were made on the challenges being experienced.

4.7 Triangulation of study findings

To understand the perception on preparedness and response measures at the points of entry as well as to evaluate the existing health preparedness and response capacities, data were compiled and analysed from a sample of fifteen (15) key informants' interviews and twenty-eight (28) participants of group discussion complemented with observations made at the points of entry over a period of 9 months. The key strategy used was to map and categorize each type of stakeholder that were operating within points of entry jurisdictions. Participants from each stakeholder were assessed during the study. Triangulation of data was done by looking for common themes that are agreed upon by participants and that has resulted in generations of codes that were used during data analysis. Evidence of related descriptions made by various participants suggest the type of capacities existing at cross-border points. The use of multiple qualitative data collection methods during study generated outputs that were in support of the themes created during the study. Data were yielded using different methods, hence drawn the conclusion that guided the discussion and recommendations made during the study.

The following steps were taken during the data analysis process.

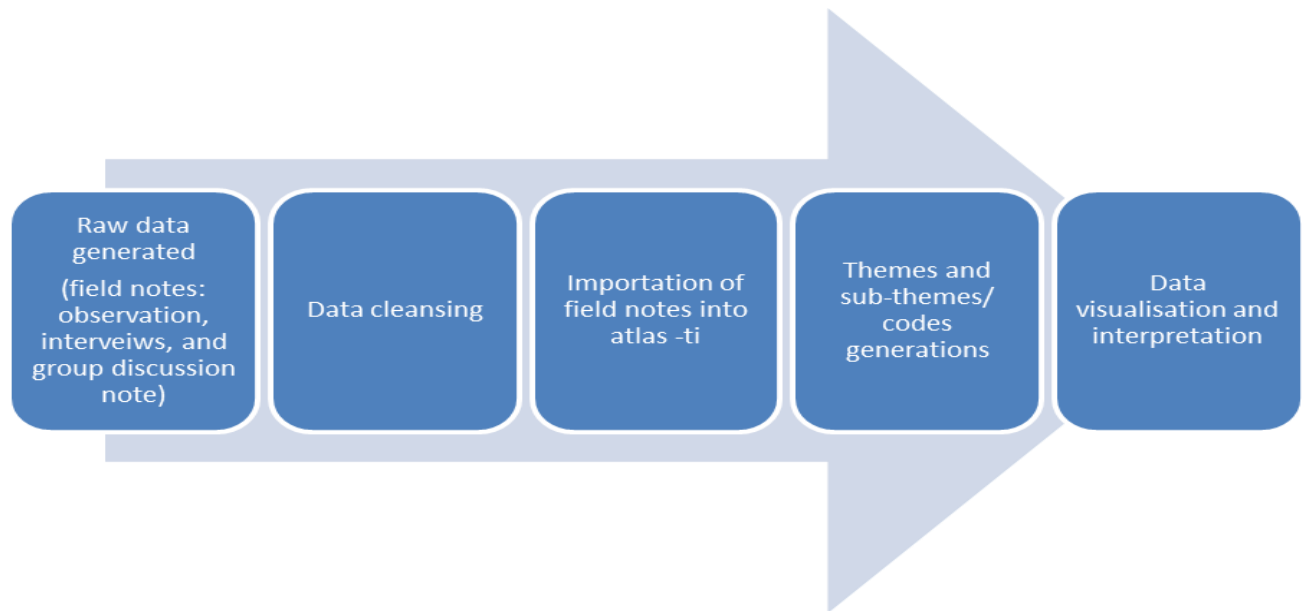


Figure 4. 5 steps used during data analysis

4.7 Chapter Summary

The researcher presented results on preparedness and response practices at points of entry in the Walvis Bay district based on the observations, focus group discussions and interviews conducted during this study. The study findings revealed various challenges such as budgetary constraints experienced at cross border points that influence effective implementation of cross border health capacities. Furthermore, it was found that effective implementation and adherence to cross border health measures all depend on various capacities such as coordination, communication, integration or different stakeholders, provision of adequate resources and equipment, provision of skilled staffs and licensing of private sector roles in preparedness.

The next chapter discusses these study findings with reference to the reviewed literature and the research objectives.

Chapter 5

Discussion of Qualitative Findings

5.1 Introduction

This chapter discusses the findings of the study together with the literature reviewed, the study objectives, research questions and the theme developed. The study aimed at assessing the existing response and preparedness measures of preventing the spread of diseases at cross border points in Namibia through the following objectives:

- Assessing preparedness and response measures, and
- Determining the socio-economic and institutional factors that influence the effectiveness of cross border preparedness and response measures at entry points in Walvis Bay, Namibia.

The major finding from data generated in this study revealed that Namibia is striving to improve cross border capacities with the core aim of preventing cross-border disease transmission. The availability of national health guidelines, policies and regulations that guides the implementation of cross border health measures were some of the findings of this study. Additional to that, the study revealed that both the airport and the harbour have emergency plans in place which describes the roles and responsibilities of stakeholders during the management of events or diseases.

From the biographic characteristics of the participants, the gender distribution indicated that the younger age groups of 28-37 years constituted most of the focus group discussants and interviewees of which most participants were female.

5.2. Objective 1: To determine preparedness and response measures in combating the importation of infectious diseases at cross border points

The study found that preparedness and response activities at cross-border points are not independent from the national surveillance and response system described in the 2011 National Technical Guidelines for Integrated Disease Surveillance and response (MoHSS, 2011). These activities are in line with the 2016 National Port Health Strategy, a proposal for the government

to improve, develop and promote all designated entry points in Namibia to meet the IHR capacities (WHO, 2005). The study findings concur that the cross-border points in Walvis Bay (airport and harbour) are expected to meet health capacities to manage and detect infectious diseases. Surveillance functions such as case identification, reporting of notifiable diseases, contact tracing, screening of passengers and inspection of cargos were supported by findings as some of the existing health measure applied at the points of entry.

Souza, Davis, & Shire (2011) indicated that disease control and prevention programs have been a success when resources were dedicated to public health function of detecting targeted diseases and using threshold to initiate prevention, control and monitoring action at the facility and operational level. According to IHR (2005) cross border preparedness and response is one of the priority functions that are required for improving public health response and surveillance. Surveillance activities involve functions of case detection, reporting, analysis and interpretation of data, implementation and evaluation of tasks

In agreement with IHR (2005), the study outcome acknowledges the prioritization of being prepared to detect and respond to outbreaks and public health events at the borders and to create a defence against the importation of infectious diseases into the country. Nevertheless, the study results highlighted a number of challenges that lead to an assumption that cross border points in Walvis Bay are limited in capacities. It is evident that integration of roles of various stakeholders is encouraged at cross-border points. This view supports the implementation of 2011 IDSR guidelines which defined “integration” as a way of harmonising different methods, software, data collection tools, standard and case definitions in order to maximise efforts among all stakeholders, management and control programs. From literature it is evident that the integration of roles is encouraged because it strengthen the abilities of staffs and stakeholders at the points of entry, regional and national level to render an effective cross border health program; leads to effective utilization of available resources; improve the flow of information between stakeholders; increases the involvement of all stakeholders in preparedness and response system and trigger epidemiological investigation, detection and reporting of all public

health threats (Kinsman *et al.*, 2018; Madhav *et al.*, 2018; Ughasoro, Esangbedo & Udorah, 2019; Lee *et al.*, 2021).

As a norm, public health threats and events require an immediate response to stop the transmission. Notwithstanding, Lee *et al.* (2021) concurs with the outcome of the study that revealed that immediate preparedness and response can be achieved through collaborative efforts and coordination between stakeholders. This same view is reiterated in National Port health strategy of 2016. Furthermore, in a review on *“managing borders during public health emergencies of international concern: a proposed typology of cross-border health measures”* by Lee *et al.* (2021), it was specified that inter-sectoral collaboration and coordination between relevant governmental and nongovernmental sectors is required for planning, implementation, monitoring and evaluation of cross border health programs at all level. Similarly, the National Port Health Strategy (NPHS) relate coordination as an act of information sharing, joint planning, monitoring, and evaluation that is required for provision of relevant data and information necessary to inform the policy makers and national response. To support coordination and collaborative role, stakeholders at points of entry have been holding regular facilitation and operational meetings as revealed by this current study. The establishment of preparedness and response committees facilitate their operations in compliance with the specification of the NPHS.

Notably, cross-border health measures applied are encompassed in the national policies and legislation. This includes The Public and Environmental Health Act of 2015 and National Port Health strategy. The procedures articulated in these frameworks were in concurrence with the study outcome for example pertaining to some of tasks performed at the entry point. The review of Lee *et al.*, (2020). outlined that existence of national policies strengthens the ability of cross border points to respond promptly to disease outbreak and other public health event.

The study findings further revealed various preparedness and response measures such as the closing of borders against non-emergency travel during early response to COVID- 19. Evidence by Kinsman *et al.*, (2018) showed that, movement restriction is categorised as a pre-border health measure that can positively minimise the impact of cross border disease transmission. IHR 2005 encourages the application of cross-border health measures that cannot interrupt travel and

trade. In compliance to the IHR recommendation it has been observed during the study that although non-emergency travel was restricted during early stage of response to COVID-19., borders were open for special goods supplies and provision.

Further compliance to national policies was also observed during the study through application of screening and inspections capacities. Previous studies have found out that cross border health measures are applied to determine necessity of movement undertaken. Interestingly, movement controls conducted at the Walvis Bay borders are both travel-related (human) and trade-related (goods and services). These control measures are in correlation with discussion of WHO (2020) which specify that public health response to individual travellers, baggage, cargo, containers, conveyances, goods and postal parcels with known or suspected exposure to communicable disease largely depends on the type of exposure and whether detection occurred before, during or after travel. Public health response also depends on risk assessment capacities such as abilities to conduction inspections and clearance or certification. Conducting health risk assessments as per WHO standards outlines the ability of gathering, assessing, and documenting information for a specific time, period and location (WHO, 2020). Having risk assessment abilities at cross-border points is a recommended approach to inform the process of prioritization and resource allocation. Reasons for conducting risk assessment at cross-border in Walvis Bay are revealed in the study as follows:

- To plan, be prepare and respond against any emerging health incident at the borders
- To identify and detect cases
- To provide evidence for informed decisions on risk management and risk communication.
- To identify standard operating procedure that strengthens the implementation of other required capacities at the border.
- To provide evidence for recommendations required for program improvement

Participants expressed during group discussion about the capability of conducting health risk assessment (13 responses). Kinsman *et al.*, (2018) suggest that the success of risk assessment depends on effective communication and collaboration among the stakeholders and response sectors throughout the implementation process of cross-border health measures. The

assessments conducted by Kinsman *et al.*, expressed similar opinions which is advocating for increasing capacity of health programmes to perform risk assessments, as alluded to by the European Centre for Disease Prevention and Control (ECDC) (2009). Incidentally, the abovementioned risk assessments found that cross border preparedness and response capacities have been built from past experience and response to outbreaks such as yellow fever, SARS, MERS and Ebola (ECDC, 2009; Kinsman *et al.*, 2018). Significant observation is that health measures at the Walvis Bay airport have been implemented and intensified since 2014-2016 Ebola outbreaks in West Africa. Lee *et al.*, (2020) cautioned that experience with traditional cross border health implementation does not necessarily generate positive outcome on prevention of disease importation. However, the national port health strategy specifies that the ministry of health alone cannot implement the required health function at the point of entry for some specific roles, therefore additional to their traditional role; it requires engagement with varying stakeholders.

The researcher is of opinion that for an effective response system the national health system ought to be capacitated and prepared to circumvent any challenges that comes along with unprecedented outbreaks of infectious diseases. Even though some studies hypothesised that as long as border health services are implemented, the possibilities for disease importation are minimized, outcome of the study showed that measures that were applied during the early stage of COVID-19 could not prevent importation of COVID-19 cases into Namibia. These findings are in concur with the opinion of Lee *et al.*, (2020), who posits that despite the implementation of border measures in response to COVID-19, the disease still spread to 95% of the countries worldwide.

The findings of JEE conducted in 2016 in Namibia on lack of consistent presence of agencies and provision of other resources at the borders to create and maintain a public health response program (WHO 2016), was also established in this study. The researcher agrees that despite the daily presence of port health officials, Namibia cannot build a complete defence against the importation of disease if it does not capacitate all cross-border points to implement the planned response measures. The values embodied in IHR (2005) encourage the designated entry points

to facilitate international movements while exercising efforts to develop and strengthen border health capacities without interrupting and delaying movements. In consistence with the values of IHR (2005) the Government of the Republic of Namibia has established the port health department under the Ministry of Health and Social Services (MoHSS) in Walvis Bay as the competent authority to implement border health measures in the region.

The review by WHO (2020) emphasised that adoption of cross border health should not merely depend on the custodian health authorities such as the Ministry of Health and Social Services. Nevertheless, the study outcome revealed that there is a culture of likening preparedness and response measures to the Ministry of Health and Social Services' operations. However, Lee *et al.* (2021) disapproves this culture by expressing that response efforts without collaboration from various socioeconomic sectors are not complete. However, activities and measures for preparedness and response should be enabled and reinforced at cross border points via established public health response plans and accompanying standard operating procedures from various sectors. The weakness outlined in the National Port health is that public health sectors alone cannot implement required measures. Preparedness and response measures demand to be applied at all stages of the journey. This is because for example, the journey can be determined by the passengers, airliners, other stakeholders such as travelling agents and public authorities at the border.

Kinsman et al. (2018) has expressed that the world has become more interconnected through a significant increase in traffic volume, therefore, sufficient accounts should be taken by different levels and entities of health response to minimise the consequential impact of multinational health threats. Despite the country's efforts towards response, the results of the study did not reveal the existence of bilateral and regional arrangements that support cross-border health implementation between Namibia and countries of departures. Although IHR 2005 set out how States Parties should apply cross border health measures in a standardised and coordinated way, health measures have always set alongside various national regulations between sovereign states (Lee, *et al* 2021). These expressions by Lee *et al.*, (2021) are indisputable evidence that health

measures cannot be applied independently between states, if so, disease transmission continues to spread across borders.

COVID-19 pandemic is likely to affect people around the globe for some time and the measures undertaken at POE will inevitably continue to be a significant component of the international response (WHO, 2021). Implementing timely and effective measures across the two points of entry in Walvis Bay will be central to managing the effects of COVID-19 and other disease threats in the future. The researcher posits that the established port health service in Walvis Bay has built a reputation for offering immediate cross border response activities. These are in line with activities such as screening of passengers, conveyances inspection and clearance of conveyances, conforms to guidance as outlined by WHO (2021). Ughasoro, Esangbedo & Udorah (2019), advocates that strengthening of such capacities will improve diagnostics and case identification abilities.

Reviewed literature confirms that health measure at the border should be enhanced by incorporating both pharmaceutical and non-pharmaceutical interventions and supported by scientific or social research (Ughasoro, Esangbedo & Udorah, 2019; WHO, 2020). Such intervention will help in developing mechanisms and plans of action that will control and prevent the importation of communicable diseases. Lee *et al.*, (2021) attest that if travellers and trades physically reach the entry points, the measures that they have to apply include checking of necessary documentation (such as proof of essential travel, vaccination and test certificates), screening, inspection, quarantine and further testing or vaccinations and payments of fees and penalties.

5.3. Objective 2- To identify socio- economic factors that influence the effectiveness of cross border preparedness and response measures

The study supports the identification of capacities of every stakeholder at the points of entry. This can be strengthened by introducing a licencing process of important role that need to be established at the point of entry. Analysis by Liu *et al.*, (2015) on “*Strengthening core public health*

capacity” revealed that a country’s defence against infectious disease is reflected in application of several capacities such as:

- Holding of regular meetings with established committees and relevant stakeholders,
- Establishing validation systems to test health measures and control mechanisms in place,
- Ensuring coordination of roles and collaboration between different stakeholders,
- Establishing a communication system to dispense relevant information to affected parties and use of equipment’s and technologies that will lead to an effective resistance system against multinational spread of communicable disease.

The study findings revealed that effective preparedness cannot be completed without improving the knowledge and skills required during the response. The preparedness challenges identified during the study were more on the re-organization of the response structure due to the revolved nature of pandemics and pressure on the public budget. These findings concur with Madhav *et al.*, (2018) who is encouraging stakeholders to cooperate and form a team of response. The study further revealed budgetary pressures, or lack financial resources required implicate the provision of facilities and equipment needed during response.

Although there is port health service implementation at Walvis Bay; there are pieces of evidence that comprehensive and effective port health service, is affected by lack of logistic supplies. Lack of logistic supplies is one of the weaknesses that the ministry is facing as specified in the national port health strategy. Preparedness activities as much none exist unless resources are available. These findings are reiterated by Lee (2021) who is of the opinion that adequate logistics supplies at all levels of preparedness is required as to not jeopardize effective response. WHO (2020), also reasoned that challenge of stock not being supplied on time occurred because of the country’s dependence on imports of most of the goods and equipment required for response. The findings confirm the WHO report that revealed the shortage of supplies which was hugely experienced during early stage of COVID-19 pandemic (2021). Challenges related to a longer turnaround time for orders and the inaccessibility of some goods can be encountered during an outbreak, therefore preparedness plans should be reviewed in order to avoid the predicaments of inadequate logistic and resource provision.

Another finding was that there is inability to coordinate and share evidence-based information with all sectors that influence trade and travel. In addition, Lee *et al.* (2020) noted various factors that impacts preparedness and response including lack of resources at the national level and inability to implement control measures or poor decisions made because of economic and political influence. Other challenges listed by Lee *et al.*, include the fear and panic by the public and some stakeholder because of the outbreak leading to concerned parties getting reluctant to perform certain services (2020). Similar concerns such as transporters of essential goods might fear delivering crucial goods to affected areas were highlighted by WHO (2021) for example. Several factors, like adverse weather, limited time, varying objectives of stakeholder; limited skills of the staff, and lack of resources, turned out to have the ability of influencing the out of response and preparedness programme at points of entry. Nevertheless, Lee (2021) is encouraging the review of all the implementation of health actions at the borders.

Furthermore, the study also highlighted inconsistency in the implementation of policy stipulations. Although National Port Health Strategy objective is to prevent disease importation at all cross- border points, the operation at different cross border points can vary as per health implementation. The researcher established that effectiveness of cross border health measures can be improved either by formulating operational plans and ensures mechanisms for plan activation are put in place and are supported by legal frameworks. For example, legal frameworks need to be supported by regular formulation and review of operational plans. The IDRS guidelines is also in support of the finding, since outlining plans give direction on how to perform optimal and make an informed decision.

5.4 Objective 3 - To determine institutional factors that promotes effective implementation of port health services

Findings revealed that consultation with stakeholders to improve cooperation in preparedness is an enabling factor that enhanced response. The IDSR guideline listed stakeholders in health response from public, non-governmental organisations and private sectors. Among the stakeholders listed by MoHSS the following were mentions in the responses and their roles were observed during the study:

Stakeholders from the public sector

Border health operation could not be exercised without performance of health officials including the health director, nurses, medical and clinical officers and environmental health practitioners; security clusters including immigration, police and defence force and laboratory technicians. Other public sector participants that are not listed in the 2016 national health strategy but were observed by the researcher to offer main support to cross border response were: points of entry administrative bodies (Namibia Port Authority and Namibia Airport Company) and local authorities such as Walvis Bay municipality.

International donor agencies and non-governmental organisations as stakeholders

Organisations such as WHO, Red Cross and the church community were some of the preparedness and response participants that were listed in IDRS. However, the roles and involvement of these participants in cross border preparedness were not expressed in the study. Though the support of these participants could not be acknowledged directly in the study the researcher is of the opinion that these organisations have for long supported the Ministry of Health and Social services in the following:

- Expertise, resources, equipment facilities provision
- Information dispensation
- Health education and public health promotions
- Trainings and training materials

Stakeholders from the private sector

Participation and involvement of private sectors in response were observed from all the conveyances operators during. They responded mainly by ensuring health and safety on-board the vessel and the aircraft. Dispersion of health information to travellers before and during travel; proper handling cargoes during voyage and preparation of relevant documents required during assessment; and applications of licenses required from responsible authorities are some of the roles that conveyance operators were observed implementing. The findings revealed that main participants from private sector were private hospital, pharmacists, ambulance services and

laboratories. The NPHS specify the goal for integrated roles from every stakeholder, to establish an effective response program.

Custodian of port health services

The findings of the study further confirmed that Port health services formed an acknowledged pillar of the federal health response. Other strategic pillars of health response include:

- Coordination's planning, financing, and monitoring.
- Risk communication and community engagement.
- Surveillance and outbreak investigation.
- Laboratories and diagnostics.
- Infection prevention and control.
- Case management.
- Operational support and logistics, and supply chains.
- Vaccination.
- Research and innovation.

According to the NPHS Port health services spearhead the response and actions taken at cross border points in Walvis Bay. Points of entry cannot prepare and respond independently to disease outbreaks. However, the support given to points of entry from other pillars of response has been an enabling factor for actions implementation. Lee (2021) have identified categories of border health measures that must be applied: These include measures by policy goal, the measures by type of movement, the measures adopted by the public and private sector, measures applied by the level of jurisdiction, measures by the stage of the journey and measures by level restrictiveness. With knowledge about these measures, the researcher acknowledges that there are many choices to be made to strengthen health capacities at entry points. The figure below shows the proposed typology for required measures to apply at a different level of jurisdictions.

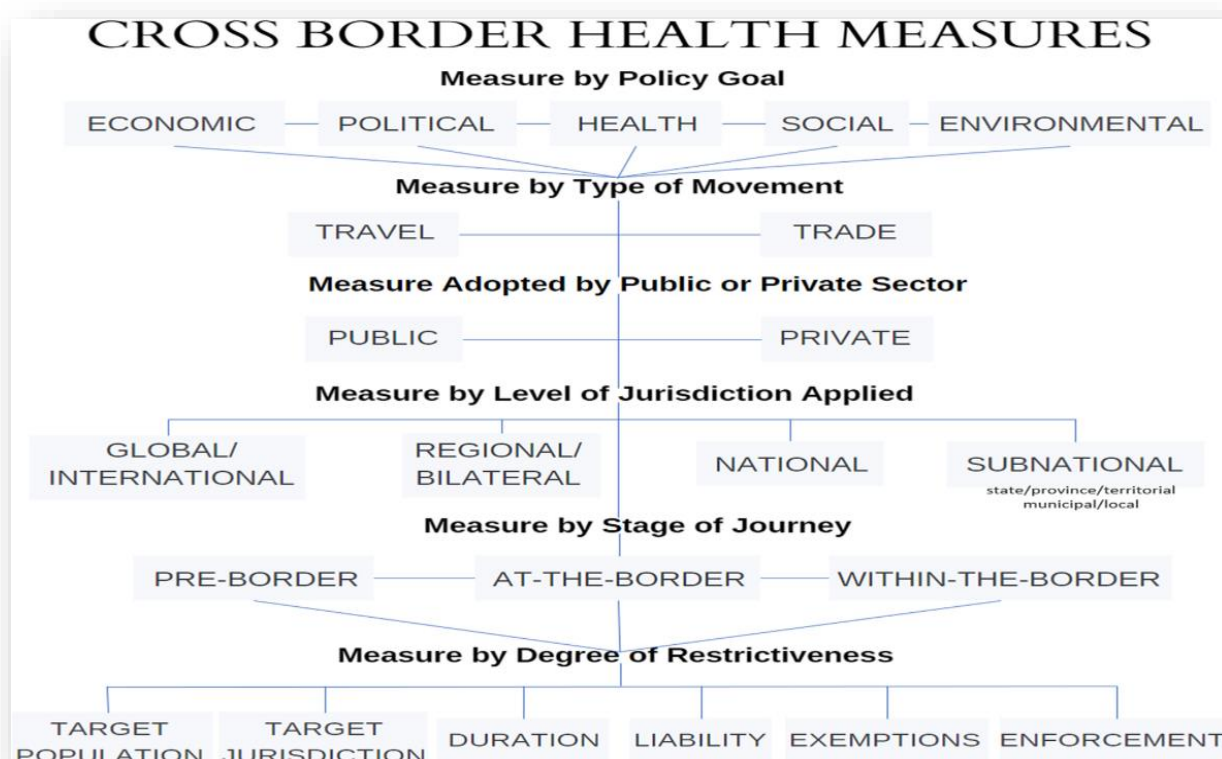


Figure 5.1: Proposed typology of cross border health measures (Lee, 2021)

Border health and preparedness actions should begin with identifying policy goals. Border health authority should recognize that health and non-health policy goals influence the choices of measures to be applied.

5.5 Chapter Summary

This chapter discusses the study findings which acknowledge the prioritization of being prepared to detect and respond to outbreaks and public health events at the borders in order to create a defence against the importation of infectious diseases into the country. Notably, cross-border health measures applied are encompassed in the national policies and legislations. The researcher is of opinion that for an effective response system the national health system ought to be capacitated and prepared to circumvent any challenges that comes along with unprecedented outbreaks of infectious diseases. The researcher agrees that despite the daily presence of port health officials, Namibia cannot build a complete defence against the importation of disease if it does not capacitate all cross-border points to implement the planned

response measures. The study supports the identification of capacities of every stakeholder at the points of entry.

Chapter 6

CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

6.1 Introduction

This study assessed cross-border preparedness and response measures that are put in place to combat the importation of diseases at points of entry in Walvis Bay, Namibia. Several challenges are highlighted in the findings of this study. Other concerns arise from the study is that mechanisms for managing health threats demand a more integrated, coordinated, structured and defined approach to deal with current and future epidemics. In this chapter conclusion and limitation of the study as well as recommendation are outlined.

6.2 Conclusion of the study

The study aimed at:

1. Determining preparedness and response measures in combating the importation of infectious diseases at points of entry in Walvis Bay, Namibia
2. Identifying socio- economic factors that influence the effectiveness of cross border preparedness and response measures at entry points in Walvis Bay, Namibia.
3. Determine institutional factors that promote effective implementation of port health services in Walvis Bay, Namibia.

The study confirmed existing preparedness and response measures which are implemented in Walvis Bay. The results indicate that cross-border health measures are dependent to national surveillance and public and emergency health response programs as stipulated in the national guideline and policies. The researcher posited these measures are effective as much as the logistic supplies and resources are adequately provided. However, more evidence established that the effectiveness of cross-border health programme is determined by the incorporation of

every relevant role of different participants not forsaking the reviews of such roles should be done to ensure that every role is acknowledged and is regulated including the role of private sector. Literature revealed further that COVID-19 pandemic has made it apparent that current and traditional health systems failed to optimal response against disease importation. The study further confirmed that most cross-border health measures are embodied in the legal frameworks; however, the inadequate budgetary allocation as well lack of recognition of the diverse role of private in response has hampered the implementation of required cross-border health preparedness and response measures.

Points of entries are anticipated to poses operational capacities to manage and detect infectious diseases. The study outcome recognises a norm for immediate health response as being able to detect and respond to outbreaks and public health events at the borders and create a defence against the importation of infectious diseases. Therefore, sufficient accounts should be taken by different levels and entities of health response to prepare in order to minimise the consequential impact of multinational health threats and infectious disease spread

6.3 Limitations of the study

Despite the common challenges, the project limitations included limited time which the researcher had to share between work and study. There were, however, some potential sources of bias in the study. Some participants in a study were aware that they are being or have been observed by the researcher, this could have influenced the way some participants responded. Likewise, the study could not eliminate a possibility of recall bias during group discussion sessions. Low responses during one-on-one key-informants' interviews have been observed, which could have affected the interpretation of the results. Despite the study findings showing the availability of technical expertise to implement minimum preparedness and response actions at Walvis Bay airport and the harbour, the correlation between implementing response actions and the rate at which they prevent disease importation was not part of the scope of this study. The study also could not investigate the significant relationship between cross-border health measures applied and types of infectious disease that were prevented to be imported. Furthermore, participants were reluctant to take part as the projects could not offer immediate benefits to them. Nevertheless some actions were undertaken by the researcher to minimise the

impact of these limitations, such as: In order to minimise recall biases an incorporation of appropriate data collection methods was ensured and research questions were carefully selected. Recommendations were also made based on challenges identified during the study.

6.4 Recommendations

Based on the study findings the following recommendations were made:

6.4.1 Recommendation to the Ministry of Health and Social Services (Policymaking and administrative levels):

Government should seek to adopt bilateral agreements to govern movements across its jurisdictions to enhance the implementation of multinational cross-border health measures. The study recommends that MoHSS should endure prioritising cross-border health capacities to improve public health. The findings showed lack of capacities such as that of laboratory capability at the PoE, therefore, the Ministry of health should establish a surveillance lab in the region. One weakness the region has is the referral of special cases; the Ministry should additionally capacitate the district health hospital to treat all suspected cases detected at the point of entry. The Ministry should develop and integrate a systematic data capturing structure to capture all the data generated at entry points that will inform an effective preparedness process for future outbreaks.

6.4.2 Recommendation to Port Health executive management and response pillars

Engagement and coordination of relevant stakeholders is the key elements of response; therefore, the port health department should continue coordinating and implementing response activities with other border control authorities as well as with public at large.

6.4.3 Recommendation for future research

The study was qualitative in nature and could not measure relationship and association between specific capacities and the rate of cross-border disease prevention. Therefore, future research should fill the gap of lack of inferential statistics in relation to cross-border health measures. More research needs to be conducted to inform the development of cross-border health measures and to provide solution to challenges identified during the study

6.5 Contribution to the body of knowledge

Study outcome emphasise the need of strengthening bilateral agreements between Namibia and other states to control movements and implement cross border health measures. Cross-border preparedness and response measures and socio-economic and institutional factors that influence implementation of cross border health measures in Walvis Bay were identified.

6.6 Chapter Summary

Limitations encountered during the study were highlighted in this section. Recommendations to the ministry of health and to policymakers as well as port health department and to researchers are outlined in this chapter. In conclusion the study outcome establishes that, cross-border movement continue to pose health threats to the country however a multi-sectoral approach is required to combat the importation of infectious diseases.

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Annexures

Annexure 1: Observation checklist

The researcher concentrated on observing the following key areas:

Key areas	Yes/No	Comments
Process for sending/receiving updates on the current situation during ongoing outbreaks of concern		
Isolation capacity		
PPE/ C availability		
Protocol and SOP for suspected case PHEIC reporting.		
Plan/protocol for the management of a suspected case PHEIC		
Contact tracing protocol for persons in contact with a PHEIC case.		
Infections control protocols		
Plan/protocol for the management of cases		
SOPs to activate service internally		
SOPs to inform regional/national public health focal point		
Training material on recognition of suspected cases available for different levels of staff		
Communication plan		

Annex 2: Informed consent

Assessing preparedness and response Measures to combat the importation of diseases of international health concern at cross border points in Namibia (a case study of Walvis Bay District)

I agree to participate in a research project conducted by Mrs. Mwakondja Alisa Ikela from the Namibia University of Science and Technology (NUST) in Windhoek, Namibia.

1. I have received sufficient information about this research project and understand my role in it.
2. The purpose of my participation as an interviewee in this project and the future processing of my data has been explained to me and are clear.
3. My participation as an interviewee in this project is entirely voluntary.
4. There is no explicit or implicit coercion whatsoever to participate.
5. Participation involves being interviewed by a researcher from the Namibia University of Science and technology. The interview will last approximately 15 to 20 minutes. I allow the researcher to take notes during the interview. I also may allow the recording of the interview and subsequent dialogue by audio/videotape. It is clear to me that if I do not want the interview and dialogue to be taped, I am fully entitled to withdraw from participation.
6. I have the right not to answer questions. Suppose I feel uncomfortable in any way during the interview session. In that case, I have the right to withdraw from the interview and ask that the data collected before the withdrawal will be deleted.
7. I have been given the explicit guarantee that the researcher will not identify me by name or function in any reports using information obtained from this interview. My confidentiality as a participant in this study remains secure. Personal data will be processed in full compliance with the NUST Data Protection Policy.
8. I was assured that this research project has been reviewed and approved by the NUST Ethics Committee.

9. I have carefully read and fully understood the points and statements of this form. All my questions were answered to my satisfaction, and I voluntarily agreed to participate in this study.

10. I obtained a copy of this consent form co-signed by the interviewer.

Participant's Signature----- Date-----

Researcher's Signature..... Date-----

For further information, please contact: Mrs. Mwakondja Alisa Ikela at 0812181432

Annexure 3: In-depth interview guide

1. How may PHEIC cases be identified or suspected?
2. Can the suspected case be effectively isolated from other persons, patients, or Staff?
3. Is staff able to safely use PPE and are briefed about isolating cases and keeping safe distances?
4. Can the suspected case promptly be reported and discussed with the public health authorities?
5. Is there appropriate initial care transport for suspected cases to the designated treatment facility?
6. Is there contact tracing assistance to public health authorities (e.g., identification of contacts, passenger lists, staff lists, and terminal registers?)
7. Are there procedures in place to disinfect contaminated areas and equipment (e.g., decontamination of luggage, convinces?)

Annexure 4: Focus group discussion interview guide

Opening Remarks

Thanks for coming today for volunteering to take part in this focus group. You have been asked to participate as your point of view is important. I appreciate your time; I know you have a busy schedule and I feel fortunate to have you all present in this focus group.

Introduction

The goal of today's focus group discussion is to assess your experience, your opinion, and the role we are playing at the cross-border points as health professionals. The focus group discussion will not take more than one hour. There are only a few basic rules to keep in mind while participating today:

- I. Everyone is expected to be an active participant, but it is important that only one person speak at a time
- II. There are no right or wrong answers and you do not need to speak in a particular order
- III. Speak freely but remember not to interrupt others while they are talking.
- IV. Note taking is for reporting purposes only and will be used for analysis.
- V. Names are not attached to the notes.
- VI. All information gathered will be analysed to determine the current status of cross border health services and make recommendations for improved border health system in Namibia.
- VII. All feedback today will remain anonymous. In order to maintain anonymity, I just ask that anything that is said during our session is not repeated outside of our session.

Anonymity: I would like to assure you that the discussion will be anonymous. As we agreed only notes will be taken, no tape recording will be done. Notes will be kept safely until they are transcribed word for word, then they will be destroyed. The transcribed notes of the focus group will contain no information that would allow individual subjects to be linked to specific statements. You should try to comment as much as you can. If there are any questions or

discussions that you do not wish to answer or participate in, you do not have to do so. I kindly request you to please try to answer and be involved as much as possible.

Introductory question

I am just going to give you a couple of minutes to think about your experience of implementing port health services

Guiding questions

1. How is the laboratory diagnostics capability for special pathogens?
2. How is the coordination and cooperation structure between different stakeholders?
3. Are the procedures in to escalate to a national health emergency?
4. Is there training material on Infection practices at the points of entry?
5. How are logistics supplies and capacities for POE staffs?
6. Is there designated in-country transportation for probable and confirmed cases detected at the points of entry?
7. Are the designated treatment facilities for probable or confirmed cases?
8. Is the existence of Legislative framework guiding your implementations, including for isolation or quarantine issue?
9. Explain how is risk communication is performed in the district
10. Would you say there are dedicated resources and staffs?
11. Is there a designated spokesperson for the port health administration?
12. Is there a use of multiple communication tools: information material, public meetings, websites, social medial, and helpline?

13. New technologies to communicate with stakeholders and the public

Concluding question

- Of all the things we've discussed today, what would you say are the most important issues you would like to express about cross border health preparedness and response

Conclusion

- Thank you so much for your time and for participating in the study. This has been a very an informative discussion
- Your opinions will be solely used for the purpose of the study and I can express you're your opinion will be valuable asset to the study, Hope you enjoyed the discussion.
- If there is anything you are unhappy with or wish to complain about, please speak to me later
- I would like to remind you that any comments featuring in this report will be anonymous.

Annexure 5: Approval to conduct the research for MoHSS



REPUBLIC OF NAMIBIA

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OFFICE OF THE EXECUTIVE DIRECTOR

Ref: MAI 2020
Enquiries: Mr. A. Shipanga

Date: 05 December 2020

Mr. /Ms Mwakandjira A. Ikela
P.O. Box 1041
Walvis Bay

Dear Mr. /Ms Ikela

Re: Academic Research Proposals Approval - NUST - Masters of Health Sciences.

Title: Assessing preparedness and response measures to combat the importation of diseases of international health concern at cross border points in Namibia (a case study of Walvis Bay District)

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
 - 3.1 The data to be collected must only be used for completion of your Masters of Health Sciences;
 - 3.2 No other data should be collected other than the data stated in the proposal;
 - 3.3 No any specimen should be collected from Human Subjects;

- 3.4 Stipulated ethical considerations in the protocol related to the protection of Human Subjects' information should be observed and adhered to; any violation thereof will lead to termination of the study at any stage;
- 3.5 A quarterly report to be submitted to the Ministry's Research Unit;
- 3.6 Preliminary findings to be submitted upon completion of the study;
- 3.7 Final report to be submitted upon completion of the study;
- 3.8 Separate permission should be sought from the Ministry for the publication of the findings.
- 4. All the cost implications that will result from this study will be the responsibility of the applicant and **not** of the MoHSS.

Yours sincerely,


BEN NANGOMBE
EXECUTIVE DIRECTOR



"Health for All"

Annexure 7: Language editor's certificate



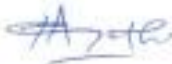
12 March 2022

TO WHOM IT MAY CONCERN

REF: ASSESSMENT OF CROSS BORDER PREPAREDNESS AND RESPONSE MEASURES TO COMBAT THE IMPORTATION OF INFECTIOUS DISEASES IN WALVIS BAY, NAMIBIA

This letter serves to confirm that the above titled study was proofread and edited by Academic Think Tanks. Editing and corrections only included, grammar, punctuations, non-readable texts or unclear statements.

Yours faithfully



A. NYATHI
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Annex 8: Data elicited from interviews

Interviews notes were transcribed as follow:

1. How may PHEIC cases be identified or suspected?

Participant 1: Port health officials do make the diagnosis of suspected case on board the vessel or aircraft.

Participant 2: The patients do report themselves to the operator of the conveyance. Sometime testing is done to confirm whether the traveller is infected.

Participant 3: Screening is done when the aircraft arrives by a port health official, so they can identify sick people during screening.

Participant 4: We are not sure if the screening by port health official does real pick-up positive cases among travellers.

Participant 5: There are various ways one can suspect cases of disease through screening, inspection, sign, and symptom observation, document verification testing, and assessing report and incident.

Participant 6: Not sure, but people from the Ministry of health know better to identify case.

Participant 7: There are procedures to follow to identify a case. As port health officials, we use a standard case definition as outlined in the guidelines. We consider SOP during screening and Inspection. Sometimes we are notified that there is someone not feeling on board the aircraft and vessels. We then do a primary screening which includes sign and symptom observation, recommend quarantine while waiting for secondary screening to be completed at the health district.

Participant 8: Port health do identify affirmed about the suspect of ill travellers.

Participant 9: Case identification begins with the traveller reporting himself to the health officials when he believed she was sick or exposed to an infectious agent. Port health officials usually investigate incidents to detect cases. There are many ways to identify a suspect case.

Participant 10: The health system currently is not entirely equipped to detect all suspected cases that we had corona outbreak in Namibia because suspected cases were not effectively quarantined and tested.

Participant 11: People nowadays depend on testing to confirm whether the traveller is not ill. At the moment, most of the testing facilities are not established at the points of entry. I don't think that we can detect all the suspected cases real.

Participant 12: There is no reliable way to detect cases such as for COVID 19 because until now many people do not understand how corona spread.

Participant 13: Cases can be identified by reviewing documents and testing of travel or for triaging them for any infectious illness.

Participant 14: When a traveller is having symptoms, it is easy to suspect him for possible infection, however, it is also difficult to detect infectious disease when no analysis is done or the test is done during the incubation period.

Participant 15: Case can be detected through testing

2. Can the suspected case be effectively isolated from other persons, patients, or Staff?

Participant 1: Yes, but during the flight, it might be challenging to isolate the cases.

Participant 2: Yes, when it is only a few travellers are exposed, they can be easily transferred to the isolation facility.

Participant 3: Isolation of case is the next step required when the cases are identified. There are temporary quarantine facilities at the airport where people with negative test results for COVID-19 were kept until they were tested. The vessel is placed under quarantine when there is a suspected case on board the vessel.

Participant 4: No, because we do have enough screening area in the terminal, and when passengers arrive in the terminal, they come as a group.

Participant 5: Yes, after the people are screened, the health official always sets aside the sick travellers.

Participant 6: Isolation is not always possible because travellers are only screened in the terminal. By the time you discover an infected person on board; many people will be exposed already.

Participant 7: Nowadays, exposed people are referred for quarantine, but there was a time when people were isolated at home because the isolation facility was full.

Participant 8: No, because infected people were supposed to be isolated at the airport, but now you see people sick suspected of being referred to town. There were supposed to be treatment and quarantine facilities at the airport so that ill people would be all managed before entering the country.

Participant 9: Health officials do advise when isolation and quarantine is required.

Participant 10: Yes, because generally no one what to mingle with the sick person. Passengers are processed at immigration only after port health has confirmed that all travellers are not ill.

Participant 11: Yes, when it is known that the traveller is sick, he is always put aside even by the airliner.

Participant 12: Health official screen and quarantine the sick travellers.

Participant 13: You cannot isolate passengers until you know their lab-confirmed results. It was even reported that people with a negative COVID-19 result later tested positive, so how could this be possible?

Participant 14: Travellers are always sent to the hospital for a complete diagnosis to be isolated.

Participant 15: The government needs to develop more isolation facilities at the airport. Now all have one holding room where the incident of people that forged their results are kept until their tested.

3. *Are Staffs able to safely use PPE, or are they briefed about isolating cases and keeping safe distances?*

Participant 1: PPE is available for the health personnel and cleaners.

Participant 2: Yes, health staff knows when to put on the PPE, and health personnel knows how to isolate cases.

Participant 3: I understand people need to be fully protected by wearing full PPE, but port health staffs haven't been wearing full gear when they are conducting the screening except for the mask.

Participant 4: During COVID -19, it was mandatory to wear a mask in a public place, so everyone was wearing a mask.

Participant 5: People are not putting the on the right PPE; for cost-effective sake, they put anything they reach that reflects the sign of PPE.

Participant 6: Staff is aware that they need to put on PPE, but you find people walking to the airside without masks. I don't wear a mask because it is tiring and uncomfortable if you put it on the whole day.

Participant 7: Yes, PPE is provided for emergence personnel and health staff.

Participant 8: Staffs doesn't wear PPE correctly; you can see people with a hanging mask while handling arriving passengers.

Participant 9: Staff can sometimes reuse masks to cost savings; this is a harmful act.

Participant 10: The employers are always not providing the PPE on time. Sometimes officials buy their masks. But the health official does always put on their mask.

Participant 11: Stakeholders have always consulted health officials when they need guidance on what PPE should be used.

That's why health officials need to assess every incident so they can give guidance to the stakeholders.

Participant 12: All staffs are familiar with what PPE to use as it is the employer's responsibility to induct all Staff on the use of required PPE.

Participant 13: PPE is expensive, so they are always not available for use by Staff.

Participant 14: Staff aware of how to use the PPE although they do not use it correctly or whenever they need it.

Participant 15: Yes, the flight attendants are trained on how to use PPE/C if they handle an ill traveller.

4. Can the suspected case promptly be reported and discussed with the public health authorities?

Participant 1: Yes, because port health authorities are frontline responders, they are always available to advise and discuss health incidents.

Participant 2: The airport authority does regular sensitization meetings to encourage all stakeholders to report all incidents to relevant authorities. Health officials are always notified when an incident is on board in the aircraft or the vessel's port.

Participant 3: Many a time, airliners notify officials at the airport in advance about an ill passenger on board the aircraft.

Participant 4: Yes, the health officials are present to report any sicknesses at the airport.

Participant 5: All border control authorities were supposed to work together to identify and report cases accordingly. By law, all the suspected infectious disease cases were supposed to be reported to the health officials.

Participant 6: Suspected cases are reported to the health officials.

Participant 7: Yes

Participant 8: Usually, the identified sick travellers are reported to health officials for further assessment.

Participant 9: the known suspected cases are reported to the port health officer; however, there is a possibility that mild illnesses are overlooked, and not all are reported.

Participant 10: So far, all the incidents that happened at the airport have been discussed with port health officials. Our officials have been active and performing better compared to Hosea

Kutako International Airport in Windhoek. Officials could pick up several of the forged results, while an official at Hosea did not detect any forged COVID test result yet. So, they are working hard.

Participant 11: The airport authority does regular sensitization meetings to encourage all stakeholders to report all incidents to relevant authorities.

Participant 12: Yes, the cases are reported to the Ministry of Health official.

Participant 13: If all stakeholders worked together to sensitize the public on the Importance of disclosing required information to the health authority, reporting cases would be easy.

Participant 14: All the incidents that occurred at the airport were discussed with port health officials.

Participant 15: We haven't had confirmed cases at the airport, but minor incidents were notified to Ministry of health officials.

5. Is there appropriate initial care transport for suspected cases to the designated treatment facility?

Participant 1: Airport has one ambulance to passengers to the hospital.

Participant 2: There is no allocated vehicle to transport ill travellers at the airport of the harbour.

Participant 3: The current moment, there is no specific designated transport for suspected ill travellers. However, arrangements are usually made for transport provision when there is an incident report on board the aircraft.

Participant 4: Usually, when their illness was reported before the aircraft arrived; a private ambulance is arranged with the patient to the hospital.

Participant 5: Private transport services have been used all along to transport ill travellers that came through the airport.

Participant 6: Ministry of health can arrange for transport when is required.

Participant 7: NAC has standby by ambulance at the airport; however, one ambulance is insufficient when more than two suspected cases require referral to the treatment facility.

Participant 8: The points of entry rely on the assistance of private ambulance services.

Participant 9: The transport is made available when necessary. There is no dedicated transport because we don't encounter a lot of incidents reported.

Participant 10: Private ambulances are consulted when there is a suspected sick crew or passengers.

Participant 11: There is no designated vehicle for transporting suspected cases from the points of entry to the treatment facility.

Participant 12: The transport is made available when necessary.

Participant 13: Yes, there is a standby vehicle that I believe can be used when there is an emergency; so far, we did not encounter a panic situation that requires more than one vehicle at a time.

Participant 14: Ministry of health usually arranges for transport when it is needed.

Participant 15: The transport is made available when there is a suspected case.

6. Is there contact tracing assistance to public health authorities (e.g., identification of contacts, passenger lists, staff lists, and terminal registers?)

Participant 1: Yes, information that health authorities request is provided by the airliner and from the passengers themselves.

Participant 2: Not sure how that was supposed to happen, but it is necessary to provide all information requested by health officials to help them in the assessment.

Participant 3: During the COVID-19 pandemic, the health officials were doing contact tracing for the traveller and Staff. However, because of stigma, Staff did not want to reveal relevant information requested from them.

Participant 4: No response recorded.

Participant 5: Reporting and identification of suspect cases is part of contact tracing. So one can say, assistance is given to the health authority for contact tracing. All border control authorities were supposed to work together to identify and report cases accordingly. By law, all the suspected infectious disease cases were supposed to be reported to the health officials.

Participant 6: Contact identification is made by submitting passenger and crew lists to the health authority.

Participant 7: Arrival notification for non-scheduled flights is required to submit before the flight arrives. This helps assess the exposure and allows advice on health requirements to be shared with travellers before they come.

Participant 8: Assistance can always be given when requested; however, the health authority must orient all the other stakeholders to meet health standards.

Participant 9: Contact tracing is performed by the Ministry of health staff; they know who to approach when they need certain information.

Participant 10: travellers are required to complete a health surveillance form upon arrival, which captures all information needed for contact tracing.

Participant 11: Both the airliner and immigration register travellers' information that can be used for contact tracing. Airliner and traveling urgencies are urged to educate the traveller on the health risks.

Participant 12: Both information given by the travellers and the airlines are essential for contact tracing. However, travellers who believe they were exposed but not sick tend to provide wrong information about their health status to safeguard their journey.

Participant 13: Ministry of health institute the necessity of contact tracing. Some travellers are aware of health, and so they do always try to comply.

Participant 14: Yes, the stakeholder collaborates during operation. But understand contact tracing is mainly performed by port health staff.

Participant 15: Not sure if the contact tracing is performed correctly; however, it is the duty of the port health authority to ensure that the task for contact tracing is performed correctly.

7. Are there procedures in place to disinfect contaminated areas and equipment (e.g., decontamination of luggage, convinces?

Participant 1: There are no procedures to disinfect the luggage despite general cleaning and disinfection of surfaces in the terminal disinfection of luggage is not done regularly.

Participant 2: Disinfection of luggage was only observed during the early stage of the COVID-19 outbreak. I believe this exercise is being recommended only when there a high risk of contamination.

Participant 3: Surface cleaning is conducted every time. I am not aware time of disinfection was supposed to happen again.

Participant 4: Cleaning of surface are performed regularly.

Participant 5: I think training on how to perform disinfection of surface should be conducted regularly. Apart from dusting, high touched areas should be disinfected periodically, but this practice is limited at our airport.

Participant 6: Yes, luggage disinfection was once performed; I believe it is done upon the recommendation by the port health official.

Participant 7: Disinfection is necessary to keep the surface germ-free; it should be done regularly after the dusting is done. When it is believed that luggage is contaminated, it must also be disinfected.

Participant 8: We came to know the disinfection of luggage only during COVID-19, and I see it was done only during the early stage when borders were opened up for movement.

Participant 9: Disinfection of surfaces has not been done because I understand it was supposed to be done in a particular manner that requires experts.

Participant 10: Disinfection of baggage is costly; that's why it was done over a long period when it was instituted. However, to keep luggage must be disinfected.

Participant 11: Disinfection of surfaces is not monitored, and it is sometimes confused with cleaning. However, both must be conducted when it is required. Though the risk of luggage contamination is not that high, it should be performed.

Participant 12: Response not recorded.

Participant 13: The airport environment is clean because cleaning is done regularly. However, health education on handwashing needs to be given to passengers to encourage them to wash their hands.

Participant 14: Disinfections of baggage were seen as a method to prevent disease importation through luggage contamination. The high touched surfaces like passport control counter are the ones with an increased risk of contamination compared to luggage, so disinfection should focus on high contact surfaces.

Participant 15: If disinfection of language is necessary, then the health authority should prioritize it as an infection control practice.

Annex 9: Group discussion responses

Group discussion one - results

1. How is the laboratory diagnostics capability for special pathogens?
Respondent 1: Throughout the years of our experiences, all specimens for suspected diseases sampled in our district or at other communities within the country have been sent out to South African Laboratories for analysis. They sent even the first specimens collected for COVID-19 to South Africa for analysis. This is a concern because we could not analyse samples on time for the district to respond quickly. Respondent 2: The nation at large and the stakeholders should invest in skills development and acquisition of response equipment to capacitate the local laboratories Respondent 3: Our local laboratories capacity is minimum and inadequate. For example, there are no testing facilities /laboratories at entry points whenever specimens are analysed. We have to use the inland laboratories or ask for the help of the neighbouring countries.
2. How is the coordination and cooperation structure between different stakeholders?
Respondent 1: There is excellent coordination between different stakeholders operating at the points of entry. All the border control authorities notify each other when there is a concern that needs special attention from each control body. Respondent 2: Stakeholders held facilitation and updates meeting on pre-arrival of foreign vessels regularly where a representative from each stakeholder operating within the harbour attends. The airport also holds facilitation meetings monthly. They make reviews on challenges encountered during operations and suggestions on how to address them during these meetings. However, it has been a challenge to hold this regular meeting since 2020 because of COVID-19 restrictions. Respondent 3: The stakeholders' roles for inspecting cargo of imported goods at harbours are not clearly defined, and activities of different enforcement teams are sometimes

overlapping. You can find three or more different inspecting bodies doing one inspection, but they all look at the same good criteria.

3. Are the procedures in place to escalate to a national health emergency?

Respondent 1: On 17 March 2020, Dr. Hage G. Geingob, the president of the Republic of Namibia, under article 26 (1) of the Namibian constitution, read together with section 30 (3) of the Disaster Risk Management Act, 2012 (Act No. 10 of 2012), declared a State of Emergency existing the whole nation of Namibian, on account of the outbreak of the Coronavirus disease (COVID-19). The first corona cases detected in the country were among the travellers who came through the airport. The procedures to scale to national health emergencies are in place.

4. Are there training material on Infection practices at the points of entry?

Respondent 1: Guidelines and training materials on infection controls principles are available for all the known diseases internationally. Previously during the past response on Ebola and Zika virus, training and sensitization IPC principle was done, but not all stakeholders were sensitized. But during the COVID-19 outbreak, they have made efforts to sensitize all different stakeholders working with the points of entry.

5. How are logistics supplies and capacities for POE staffs?

Respondent 1: We prioritize Logistic supply during response. The ministry does supply most of the required equipment and tools during the response period. However, this equipment is usually imported or requested from the national level. Equipment are not always readily available on time on the early stage of response. They trained and inducted health professional assigned at points of entry to conduct screening and inspection, manage

6. Is there designated in-country transportation for probable and confirmed cases detected at the points of entry?

Respondent 1: The public district's ambulances services are utilized whenever they're an incident. However, there is no designated transport dedicated specifically for points of entry.

Respondent 2: In some incidents, they requested private ambulances to assist.

7. Are the designated treatment facilities for probable or confirmed cases?

Respondent 1: The district public hospital offers treatment services to all probable cases and confirmed case.

8. Is the existence of Legislative framework guiding your implementations, including for isolation or quarantine issue?

Respondent 1: Public and Environmental health act provides regulations and guidance on isolation and quarantine. The National Port Health Strategy gives guidance on implementing the cross-border health regulation.

Respondent 2: Challenges in implementing policies have not been a concern in the past because we did not have a real-life encounter with the vast pandemic, we encountered during the COVID response. National health regulations are available; however, one will say we were caught unprepared during the COVID response because we didn't have enough response resources and facilities. For example, there were not enough quarantine facilities in a district, so many people were exposed. This has jeopardized our immediate response plan. The community had never designated isolation facilities until we realized during the COVID response that we needed one. The district is, however, currently has newly built two isolation facilities with over 100-bed capacities.

Respondent 3: There should be a support to national health regulations with adequate provision resources and equipment; otherwise, health regulation will be meaningless. We have observed the culture of just observing incidents for the sake of reporting without implementing an appropriate response in the public health sector. However, it is thought that the private health sector is more capacitated in terms of resources, facilities, and response equipment compared to the public health sector.

Respondent 4: During the COVID-19 response, the private sector came on board to offer quarantine facilities. The municipalities in the region have further identified facilities that were later furnished and turned into quarantine facilities. COVID-19 was a wake-up call and has put us better positioned to better prepare for future pandemics. When there are no pertinent ongoing health threats, resources are diverted to other programs, which could be why border health management is prioritized less. It has come to light that they

did not recognize stakeholders, including private and business sectors, in the past, although they have become the pillars of response against COVID-19. For example, the private sector has been volunteering for work and donating to the construction of public response facilities.

9. Explain how is risk communication is performed in the district/ Points of entry

Respondent 1: As part of response and preparedness, the district established a risk communication pillar that handles risk and hazard communication. Social media and the internet have been used to disseminate information that needs to be shared with the public.

Respondent 2: On the other hand, social media and the internet have been destructive tools where the public is spreading conspiracies and lies on such platforms. This has jeopardized the response as people believe messages shared on social media and have no truth in them.

Respondent 3: Risk communication training for experts and stakeholders is held in the region. The risk communication pillar used to go into the community to share the available and scientific information.

Respondent 4: We do paper based and manual data reporting of our daily activities, making it difficult to get data on time and report accordingly.

10. Would you say there are dedicated resources and staffs towards response?

Respondent 1: There is a dedicated task force for response in the district under a collaborative effort of several pillars include case management, risk communications, points of entry, quarantine, private sector, security cluster, surveillance, laboratories, mental health, logistics, leadership, and management.

With the support of these fundamental pillars, the dedicated Port health services staffs implement the port health strategy at the border. A great shortage of resources and staff was experienced during the COVID-19 response. COVID-19 deprived other health services attention as response staff exercised more efforts towards COVID. This is a sign that in response, more resources and staff are required in order not to compromise the existing operations. It was observed that the attention on response was focusing more

on medical supplies and equipment. Resources such as copies, papers, cartridges, batteries, and field equipment like tents and generators were not fully supplied during this COVID response.

11. Is there a designated spokesperson for the port health administration?

Respondent 1: The Ministry of Health and Social Services has a Public Relations Officer as a spoke person to address all the media and public briefings. Public and media briefings at the National level can be sometimes are addressed by the minister and the Executive Director of the Ministry of health. In contrast, at the regional level, briefings are managed by the health director or the governor. The Principal Medical Officer (PMO) conducts public briefings at the district level. The media and public at large should consult these persons as spoke person during response.

12. Is there a use of multiple communication tools: information material, public meetings, websites, social medial, and helpline?

Respondent 1: All platforms for communication have been exercised during COVID-19 response: a 24-hour call centre was established; public meetings at regional and national levels were held regularly. The Ministry of Health has a website where health information is shared; information material has been made available. Social media and the internet have become excellent means to reach out to many people simultaneously.

13. New technologies to communicate with stakeholders and the public

Respondent 1: social media, zoom meetings, and emails have been used to communicate with local and international communities during the response to COVID.

Group Discussion two - results

Points of entry stakeholders

1. How is the laboratory diagnostics capability for special pathogens?

R. 1: Despite having many laboratories now for analysing COVID-19 samples, does our labs able to analyse and process any other special pathogens for all types of diseases? Apart for from the few swabs and samples being taken in the district, does our labs have capacity to

test all the specimen of a large group of travellers? We are hearing a variant for COVID 19- can our labs test those variants.

R. 2: We do not have enough testing facilities at the points of the entry. In SA travellers test at the airport and on sea before they enter the country but here, we can't even validate the status of test report being presented to us because we don't have any capacities to do so.

R. 3: There is a low flow of incoming travellers into our points of entry, we do always utilize the district's labs to do the analysis. What is required is to create the links to all the known labs so that we will be able to make referral for sample analysis. About the special specimens we have to specify which pathogens are of interest at the moment because we have to consider the resources that we have at hand.

R. 4: Ministry of health has not revealed what are the laboratories capacities at hand, we understand we have been struggling to transport sample to nearby region and counties for testing but if the ministry gives some opportunities to reputable entrepreneurs that are able to meet the ministry halfway, our lab capacities will be improved and adequate by now. We often do not know how our capacities are until we are in pandemic. We appreciate the progress towards COVID-19 response but what about other disease such as Ebola and yellow fever that we have been hearing. What we need to assess as whether our laboratories capacities we will be able to analyse all the special pathogens that are likely to be import through the arriving travellers.

R. 5: We have experienced that we need all the different kinds of machines to do different types of analysis, it is time to work into getting the type of machines that are required. We may need expertise advice and inputs so may know exactly where we are heading. The ministry needs to create a platform in which if the government is unable to performed all the capacities, then some else should to entrusted to do so.

2. How is the coordination and cooperation structure between different stakeholders?

R. 1: We are here because of continuous role, support and specialities of everyone around us. Although when something gone wrong, we tend to blame one another, a team was not

supposed to work in arguments, but being a helping hand to one another. We have seen more than 10 organisations being represented every day at our points of entry, however we recognise the border health authorities' and administration bodies that are enforcing the required principles so that we continue upholding the safety and security within our points of entry and at the same time protecting and promoting public health.

R. 2: Coordination within the stakeholders need to be strengthened, we realised that we will always need each other especially in this time of COVID 19, however we fail to optimise our expertise. Though everyone operates within certain jurisdictions we still need to work as one considering ourselves as in the production line, that products flows from one point to another until they are authenticated.

R. 3. We understand that we need to protect the integrity of the travellers, promote trade and discourage health threats, this we have been doing and we need to continue doing so as a team

R. 4. The coordination that we need is with private sector that offers services that we cannot offer with the current capacities that we are having as stakeholders. We need to list all the services that we may require in normal operation and in emergency situations, we must further list and notify the service providers that we need to form partnership with them, especial the transport industry, tourism and hotel sector. These sectors are playing an important role and they helping hand has become apparent during covid-19

3. Are the procedures in place to escalate to a national health emergency?

R. 1: Any threat is an emergency; health threats determine how we live and operate daily. Procedures are there but we need some thorough assessments so that we may not waste resources. When we only had less than 10 active cases of COVID- 19 the country was in lockdown and when the cases increase in number the borders were open. We acted without bases and facts. The outcome of our repose might be detriments if we do not have guidance, we should not act out of panic but out of provided scientific evidence. Politics might

influence the response but we have learned from this pandemic that we cannot act anyhow without performing thorough assessments.

R. 2: The procedures are there but we need to review their applications in the current pandemics, review the possibilities of their application in future pandemics. We must not compromise any safety and health principles but we must strengthen ourselves to be able to respond to disease outbreak accordingly

R. 3: The emergency policies are there but the custodian administrator should not be the only one to implement. Every affected party should give their views and they should make suggestions what are the possible ways to adapt

4. Are there training material on Infection practices at the points of entry?

R. 1: We must incorporate health trainings to the regular safety and security training and meeting that we are conducting. We cannot separate safety from security neither from safety aspects.

R. 2. Some health sensitisation meetings have been conducted by port health official during the early stage of COVID-19 and they continue to make update on the new systems that they are adopting that help in curbing the importation of diseases.

R. 3: All staffs should be inducted on the guiding policies, precautionary standard and role of every stakeholder should be standardised. For example, Customs officials need to be trained how to handle cargoes, immigration in the same manner need to be trained how to process passengers travelling documents by minimising contacts where possible. Conveyance's operators should be certified to perform health and safety measures on board the vessels and aircraft.

5. How are logistics supplies and capacities for POE staffs?

R. 1: Once health and safety training are performed each stakeholder will know what they will need to respond accordingly. In addition to mapping of services required it is also necessary to map of logistic suppliers required during response so that when we have an incident at the airport, we are sure that we will control it. Logistic supplies may include all the required resources, equipment's and tools that are needed for response.

6. Is there designated in-country transportation for probable and confirmed cases detected at the points of entry?

R. 1. Yes, we understand ministry of health approved which transport to be used for suspected cases. However, it has been a challenge, private vehicle has been used to transports people going for quarantine, the ministry can only arrange for and ambulance for severe ill people or for a confirmed infectious illness. What we can encourage about that, is to monitor the transporting companies and agencies whether they are keeping up with infection control practices.

R. 2: There are sometime ill person that are intentional imported into the country, this transportation is usually manageable because arrangement is made in advances. But when an incident is picked up at the points of entry there is always a tension on who to transport the patients to the treat and isolation facilities.

R. 3: It seem we managing now because we always have one or two incident a time and not occasional, we should worry what if we get many people presenting symptoms of an infectious disease how are we going to transport them to the treatment facilities

7. Are the designated treatment facilities for probable or confirmed cases?

R. 1: Yes, we have both private and public facilities for treatment of patients

8. Is the existence of Legislative framework guiding your implementations, including for isolation or quarantine issue?

R. 1: Ministry of health should guide on the health implementation of isolation, treatment and quarantine protocols at the points of entry. We have experience that we only have

temporal quarantine facilities and isolation and treatment is done the district hospitals. But we can admit that out temporal quarantine facility is only of inadmissible travellers. Regardless of which category of inadmissible persons are, all travellers are temporally held in one facility. We should consider getting some additional quarantine facilities to designate and separated health related inadmissible person and non-health related inadmissible person.

R. 2: We have been receiving some travellers that are referred for quarantine at self-home quarantine and isolation or mandatory quarantine or isolation in hotels. The ministry of health should indeed continue monitoring these isolations. It might be impossible to isolate all traveller at the points of entry now that's why all travellers are referred for self or hotel quarantine however monitoring of such travellers are monitored by port health officials

R. 3: The concerns when the suspected cases increase in number then there a pressure there is also a pressure increase to the health system and quarantine facilities. Licensing of private quarantine and isolation facility need to be strengthened

R.4: Crew at the vessels has been also referred to private quarantine facilities which has been a costly exercise and the agencies has been compromising quarantine principle by putting crews in one room.

9. Explain how is risk communication is performed in the district/ Points of entry

R. 1: Health official are entrusted to communicate health risk to the public and the stakeholders. They have been doing it by regular being presented in facilitation and stakeholders' meetings. Regularly, training on IPC protocols and new adopted IPC systems is also required to be conducted regularly

10. Would you say there are dedicated resources and staffs towards response?

R. 1: Yes, with the presence of port health officers, I can say we are trying. But we need to specify what resources we need in response. Dedicated and trained staffs are required for optimum implementation and we believe the port health officials are competent in that

R. 2: When we talk of resources we must start with the operators, the administrator and all the enforcement teams and every department need certain resources unless they are specified resources
R. 3: Yes, there are port health officers at the points of entry and all the health protocols are implemented and monitored by them.
11. Is there a designated spokesperson for the port health administration?
Yes, port health official, security cluster, immigration and customs they all certain function
12. Is there a use of multiple communication tools: information material, public meetings, websites, social medial, and helpline?
R. 1: Our suggestion will be for every stakeholder to create a website that will regularly update about the health requirements or give a link to the health information that are required. The traveller is likely to visit one or two websites if not the ministry of health website directly then they will be informed on how they should conduct themselves or before arrival upon arrival
13. New technologies to communicate with stakeholders and the public
R. 1. Yes, but we may adaptor to the new advance means if there are any, currently we are using emails to communicate to each other as stakeholders

Group discussion Three- results

1. How is the laboratory diagnostics capability for special pathogens?
R. 1: We have improved, looking back where we were at years back. We have more than 20 accredited labs to conduct COVID 19 testing compare to when our first sample was sent to National Health Laboratories for South Africa. Though we are obliged to capacitate the points of entry by establishing labs, there other influential factor that has transpired such passengers' inflow does yet demand a daily operation of a lab to be based at the borders. What is good is that we have our main labs such as NIP and Path care that we have been

using for recent testing, these labs can be capacitate so that all samples collected can be analysed within the district instead of them being transported to the other region.

R. 2: Our colleagues are doing regular inspection however few analyses is being done because there is nonexistence of surveillance lab at Walvis Bay or in the country for analysis of certain imported goods. We sometime used NSI for analysis but their capacities are still limited as they sent some samples to South Africa for analysis

R. 3: if there is a need to establish a lab at the points of entry, we need to look into that for future as movement of travellers and people increase, we need to assess on the main risks and establish somethings so that we are not caught empty handed as what happen during this pandemic.

R. 4. We have a surveillance pillar that is working towards identifying the critical area or department that need to be capacitated for lab surveillance. Nonexistence of labs at the points of entry does not nullify that we have improved on our surveillance systems. We have also improved our performance at points of entry.

R. 5: National level should establish and capacitate the surveillance lab to test goods entering the country, because at moment goods are released into the market based on physical observation and queries. We may perhaps take note of this as a critical point of consideration

2. How is the coordination and cooperation structure between different stakeholders?

R.1: You find there several stakeholders that are performing similar or same function especial on inspections of goods, however if these bodies can be merged as one competent body, duplication of functions at point of entries can be avoided, there is no point having different bodies but they all look at the same criteria during inspections. Duplication of function among public entities has been observed but how do we merge their role to preserve resources.

R. 2: coordination has been observed within the region during this pandemic, the ministry would not have made it alone without the support of all recognised stakeholders and funders. When we are having a threat, we all need to engage on what to do and how to do it. The engagement starts at the facility level/point of entry then at the regional level and also at national level. Every level needs to see whom to engage with before, during and after pandemics.

R. 3. The best way is for government or the facility level to seek memorandum of understanding with border control ministries or agencies to avoid overlapping of roles/functions/tasks.

3. Are the procedures in place to escalate to a national health emergency?

R 1: there is an emergency preparedness and response plan that gives guidance's in time of health emergency. We also use the combination of other guidance such as Public and Environmental health act. National health emergency depend on what is going in the neighbouring countries. The IHR is the ultimate guidance on health incidence that may occurs across borders.

4. Are there training material on Infection practices at the points of entry?

R. 1: Infection control practices start from training institutions that's why all the health professionals are registered with allied health professional council which assess whether the skills to be applied during practices are acquired during training. However, work-based trainings are necessary to improve on the required skills. The ministry usual offer Trainings of Trainers on various infection control practices. The emphasis should be made that all the staffs should be regular sent for workshop and training. Performance agreement should be used to assess what type of skills is lacking and the ministry and training institutions should immediately offer the required trainings.

R. 2: Supervisor should ensure that trainings and inductions on all guidelines are conducted and they are made available for reach at all operational level. Infection control guidelines at the points of entry are not independent from national infection control guidelines therefore

these guidelines should be made available to all staff points of entry staff at the points of entry.

5. How are logistics supplies and capacities for POE staffs?

R. 1: Through logistics and leadership pillar in the region, procurement of required equipment's and resources is made. Ministry of health staff at the points of entry are competent do inspection of conveyances and good as well as to conduct screening for passengers. Logistics supplier all depend when there is an emergency. In the initial stage of COVID 19 response there was shortage of suppliers to medical equipment's, pharmaceutical products and even adequate staffs. When their lack of supplies response won't be optimal implemented

R. 2: Supplies of pharmaceuticals and PPE have been most of the time being imported outside the country and in time of pandemics, delays may be encountered as we had experienced.

R. 3: There is a regional lack of provision of adequate transport to every department to perform their activities. Port health operations always need transport and lack of transport has been observed, all port health activities e.g., inspection of imported goods is not conducted fully. Port health department need additional and reliable transport to carry out their activities fully as most of them need urgent attention and cannot be accommodated by transport available for the district

R. 4: Lack of support from the region on provision of logistical issues e.g., stationeries equipment and vehicles may hinder the response. The region should therefore ensure constant supply of stationeries such as cartridges, copy paper and official stamps as port health department cannot operate without such provision on a daily basis.

6. Is there designated in-country transportation for probable and confirmed cases detected at the points of entry?

Port health official oversee the transportation of suspected cases at the points of entry. Licenced and approved transport should be used at the points of entry. More ambulance should be made available in case there is an emergency

7. Are the designated treatment facilities for probable or confirmed cases?

R. 1: Yes, we can only say the treatment facilities might be pressured during pandemics but treatment facilities are available within the district. Severe illnesses are referred to referral hospitals for treatment.

R. 2: Role of private hospital should be specified in response' guidelines and collaboration for referral of patients should be established.

8. Is the existence of Legislative framework guiding your implementations, including for isolation or quarantine issue?

R. 1: Yes, we have General health regulations that are amended regularly to promote public health and these include the isolation, quarantine and entry requirements

R. 2: One thing observed during this pandemic is the lack of control on movement among Namibia fishing vessels especially during communicable disease outbreak response. The ministry should introduce guideline to monitor the movement of fishing vessels to and from fishing ground including changing of crews, screening, quarantine and isolation. Current regulation does not have a proper guidance on arrival of certain foreign vessels including passenger vessels.

R. 3: Current regulation should be amended to accommodate the call of example foreign vessels that have been in the sea for an extended period of time. E.g., the vessels that have been on sea cannot present 7 days PCR results as required in the current regulation. Therefore, provision to do test upon arrival should be provided in the regulation.

9. Explain how is risk communication is performed in the district

R. 1: The public and travellers relies on internet and social media on the updates of health treats and emergencies, however MoHSS does not update regularly all the health information to their website or to their social media accounts. The Ministry must prioritize to sensitize the travellers on entry health requirements on their website and their website should be updated regularly as regulations changes.

10. Would you say there are dedicated resources and staffs?

R. 1: Yes, both at operational level and management level

11. Is there a designated spokesperson for the port health administration?

R. 1: Yes, we have a director for the region and a senior medical officer at the district

12. Is there a use of multiple communication tools: information material, public meetings, websites, social media, and helpline?

R. 1 There is multiple communication tools that can be utilised; however data capturing and document validation system should be established at the points of entry. Poor internet connection at point of entry is observed. The Ministry should adopt and implement international recognized validation system at points of entry. Additionally, proper trainings should be conducted to all staffs on the use of recognized travelling documents validation system.

13. New technologies to communicate with stakeholders and the public

R. 1 Internet connection should be prioritised at the points of entry

Annex 10: Data elicited from Observation

Table 9: Observation data

1. Isolation and quarantine capacity
Observation 1: Health screening and inspection of conveyances, cargoes, and travellers coming from foreign and affected countries are conducted at the airport and the harbour. Observation 2: Airport—quarantine facilities to temporal isolated suspected cases are at are available at the. Ministry of Health has allocated trained staff to administer port health service at the port. Observation 3: Harbour—Suspected cases are quarantined on-board the vessels. There are allocated trained staff to administer port health services. Observation 4: All suspected and confirmed cases detected at the points of entry are further referred to the approved isolation or quarantine centre in the district
2. PPE/ C availability
Observation 1: Full Personal Protective Equipment and clothing (PPE/C) is always available for health personnel that are conducting the screening and clearance/inspections at the harbour and the airport.
3. Protocol and SOP for suspected case reporting.
Observation 1: The “National Technical Guidelines for Integrated Disease Surveillance and Response” outlined the reporting principles that can be followed when reporting the events or diseases with epidemic potential detected at points of entry. Observation 2: The initial report about any incident at the points of entry is fast made by means possible (telephone, text message, and emails) to the next level and the district health Information System (HIS) Officer Observation 3: Both the airport and the harbour have emergency plans, describing how notification of events or diseases with epidemic potential should be detected.
4. Plan/protocol for treatment management of a suspected and confirmed case
Observation 1: Various guidelines are available for managing and treating suspected and confirmed cases of diseases with epidemic potential. Suspected and confirmed cases are

handled and treated at the district health facility (isolation centre) liaison with the private health sector.
5. Contact tracing protocol
Observation 1: Ministry of health lead on contact tracing of all contacts and suspected cases.
6. Infections control protocols
Observation 1: Port health officials designated at the entry points oversee that the ports and airport authority apply recommended infection control practices at all times. When insufficient evidence is detected during the screening and inspection process, recommendations are given immediately. Observation 2: Inspections of cargoes and screening of travellers were conducted upon arrival. Observation 3: Entry and import requirements are shared regularly through the port health services office.
7. SOPs to activate service internally
Observation 1: Additional to national health guidelines, Both the airport and the harbour have their emergency plans in place which describe the stakeholders, their role, and responsibilities during the management of events or diseases. Observation 2: Stakeholders identified include Port health officials/Ministry of health, Immigration officers, Customs officer, Security cluster personnel, clearing agencies, airlines and shipping agencies, Namibia Port Authority (NAMPORT), Namibia Airport Company (NAC), private health sectors, governor's office, municipalities in. These stakeholders work together to accommodate and process cargoes, travellers, and conveyance in the district.
8. SOPs to notify the next level and to national health focal point
Observation 1: Port health officials at entry points make the initial reporting to the next level - the region and the regional level report to the national public health focal point.

9. Trainings and information materials on recognition of suspected cases available for different levels of staff
Observation 1: Orientation and sensitization sessions have been conducted with different stakeholders operating within the points of entry during the early response stage for COVID-19. Observation 2: The national level prioritizes the regular training and workshops in port health program implementation.
10. Communication plan
Observation 1: Following confirmation of the event at entry points, health authority's liaison with regional/national level authorities to receive guidance on common positions on what information is delivered to the media. Despite National and regional centrally coordinating information to be shared media, media personnel usually approach points of entry, district, and regional level to get first-hand knowledge.

Annex 11: Similarity report

Thesis			
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