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Successive Cyclone Idai Disaster and Covid-19 Pandemic Negatively Affected Tourist Arrivals in Chimanimani National Park, Zimbabwe

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ABSTRACT

Zimbabwe suffered a devastating meteorological disaster when Cyclone Idai affected the southeast part of the country in March 2019. Barely a year after the cyclone event, the coronavirus disease 2019 pandemic emerged. This study explored how consecutive Cyclone Idai and Covid-19 affected tourist arrivals in Chimanimani National Park (CNP), Zimbabwe through; (i). Determining trend in tourist arrivals between 2010 and 2022, (ii). Establishing how Cyclone Idai and Covid-19 affected tourist arrivals and, (iii). Determining groups of tourist mostly affected by the consecutive Cyclone Idai and Covid-19 pandemic in CNP, Zimbabwe. Analysis of printed and electronic literature and tourists arrival records (2010-2022) from the Zimparks Chimanimani tourist office was done. There was a significant difference in number of tourist arrivals recorded before and after Cyclone Idai and Covid-19 incidence (p-value = 0.004). Tourist arrivals declined beginning 2019 to 2021. Local adult arrivals decreased from an average of 3566.75 to 1222 representing 34.26% while international adults' arrival per annum decreased from 375.75 to 101.75 representing 27.08% during the same period. Tropical Cyclone Idai left trail of destruction on road networks, while Covid-19 resulted in travel restrictions and prohibited gatherings. Future researches may quantify in monetary value, total losses incurred in CNP as a result of consecutive Cyclone Idai and Covid-19 pandemic.

INTRODUCTION

Tourist arrivals at a destination is shaped by factors such as disease prevalence, political instability, and tropical cyclone incidences (Khan *et al.*, 2020; Njoya *et al.*, 2022). These factors have profound effects on tourist's destination of choice (Rossello *et al.*, 2020). According to Barbhuiya & Chatterjee (2020) natural disasters such as tropical cyclones and tsunamis not only cause immediate physical devastation to a place, but they also have long-term social and economic impacts in general to the affected communities. The tourism sector is thus vulnerable as it is strongly reliant on other sectors.

Diseases and tropical cyclones for example, have profound impacts also on individuals and organizations as well as in the tourism industry at local, regional and global level (Meditinos & Vassiliadis, 2008; Rossello *et al.*, 2020; Ha, 2023). Studies have shown that diseases and natural disasters such as tropical cyclones have effects on destination country and they indirectly influence travel to and from the affected region (Jin, *et al.*, 2019; Ruan *et al.*, 2017). Tourist movements to destination of their choice can be influenced by different factors such as diseases, tropical cyclones and political instability leading to decline in visitor arrivals at a destination, hence a concern to tourism managers.

Environmental disasters and pandemic have always occurred (Cheval *et al.*, 2020; Marazziti *et al.*, 2021). However, the impacts of such disasters have increased substantially due to effects of climate change and growing complexity

of socio-ecological systems in a highly connected and globalized world (Becken, *et al.*, 2014). In Zimbabwe, for example, Chimanimani National Park (CNP) is one key preferred tourism destination area due to its attractions that makes the area unique. CNP had been constantly affected by seasonal tropical cyclones since the 2000 cyclone Eline while in 2019, the Covid-19 was declared a global pandemic by the World Health Organisation and it also affected tourist travels across the region and beyond (Zimbabwe: Tropical Cyclone Idai Covid-19 Preparedness Assessment Report, 2020). Matura & Mupfema (2018) noted that outbreaks of pandemics and natural disasters results in travel restriction to a destination for travelers. Goods, transport system and communication channels are also affected (Rossello *et al.*, 2020; Rahman *et al.*, 2021). Thus as a result, the activities at the destination are interrupted due to these multiple disturbance (Becken *et al.*, 2015). Hence deter visitors from travelling to affected destinations (Bhati *et al.*, 2016).

Problem Statement

Zimbabwe suffered a devastating meteorological disaster when Cyclone Idai affected the southeast part of the country in March 2019. Barely a year after the cyclonic event, the coronavirus disease 2019 (Covid-19) pandemic emerged that led to travel restriction in most countries (Chingombe & Musarandega, 2021). Following the sequential occurrence of these disturbance, no researches have been done to understand their effects on tourist

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arrivals in CNP. Concrete research that examines the impact of Cyclone Idai and Covid-19 pandemic are necessary to determine if these disturbance had actually affected tourist arrival in CNP.

Primary Objective

Consequently, the study aims to explore how consecutive Cyclone Idai and Covid-19 affected tourist arrivals in NNP, Zimbabwe.

Specific Objectives

1. To determine trend in tourist arrivals from 2010 to 2022 in CNP, Zimbabwe.
2. To establish how Cyclone Idai and Covid-19 blocked tourist arrivals in CNP, Zimbabwe.
3. To identify groups of tourists mostly affected by Cyclone Idai and Covid-19 pandemics in CNP, Zimbabwe.

MATERIALS AND METHODS

Study Area (Chimanimani National Park)

CNP is located in Chimanimani district of the Eastern Highlands Region of Manicaland Province of Zimbabwe. The park is renowned for its breath-taking landscapes, crystal clear waterfalls, an untouched ecosystem, and spectacular hiking trails which attracts tourists from different parts of the world. The climate of the area is highly varied with low areas being relatively hot and dry and higher areas markedly cooler and moister. Being located less than 200km from the Indian Ocean, CNP is prone to recurring tropical cyclones from the Mozambique Channel which have effects on infrastructure such as roads network and communication. Since 2000, a number of tropical storms like the Cyclone Eline, Cyclone Eloise and Cyclone Chalane had been recorded in Chimanimani (Chimanimani District Food and Nutrition Security Profile Report, 2022) The park attracts tourist from different parts of the world of diverse culture. Due to human movements, the area was also affected by the global pandemic announced in 2019 which resulted in travel restrictions at local and international level imposed by the World Health Organisation and local government.

Survey Design and Data Collection

The research considered two key elements as source of data relating to tourist arrivals in CNP and hence data was triangulated from two main sources 1. Document analysis (Printed and electronic literature), and 2. Analysis of tourism arrival records (2010-2022) from the Zimparks Chimanimani tourist office. Document analysis was employed in this study to review both printed and electronic literature relating to impact of Cyclone Idai and Covid-19 on tourist arrivals in Chimanimani. Document review is a process used to collect data after reviewing the existing materials. It is an efficient and effective way of gathering data as it assists in triangulating findings collected through other evaluation methods, for example interview and observations. Published

online reports and documents of United Nations World Tourism Organisation (UNWTO), World Travel and Tourism Council (WTTC), Zimbabwe Tourism Authority (ZTA) and researches done were analysed to get an insight into Chimanimani's tourist destination areas and related characteristics. The aim was to assemble a body of information relating to Covid-19 and Cyclone Idai in Chimanimani area. Secondary data relating to tourism arrivals in CNP from 2010 to 2022 was retrieved for trend analysis.

Data Analysis

Content Analysis method was used for online and printed materials. It is widely accepted and the most frequently employed technique for data analysis in research methodology that can be used to analyze the documented information from text and images. The resultant data on document analysis from printed and online literature was examined and interpreted in order to elicit the meanings behind it relating to how Cyclone Idai and Covid-19 affected tourist arrivals in CNP. In this study, secondary data retrieved for the period 2010-2022 were limited to yearly nature of tourism data recorded at the CNP Tourist Office. Tourists arrival statistics from 2010-2022 were analysed using time series techniques to expose trends in Minitab-17 Statistical Software. A comparison on arrivals were also done for the period before and during disturbance that is 2015-2018 and 2019-2022. Tourists arrival data for locals and foreign visitors were first tested separately to determine if it followed normal distribution using the Kolmogorov-Smirnov at $p = 0.05$. All data followed normal distribution ($m = 1680$, $StDev = 977.1$, $N = 4$, $Ks = 0.264$ and $P\text{-value} > 0.150$). Hence, a two-sample-t-test was used to determine whether number of tourist arrivals before (2015-2018) and during (2019-2022) Covid-19 and Cyclone Idai differ significantly.

RESULTS

Trend in Tourist Arrivals in CNP (2010- 2022)

The number of tourist arrivals increased from 2012 to 2018 for both local and internationals. Between 2019 and 2021, there was a general decline, with 2021 recorded the lowest arrival for both local and international tourists. There was a recovery in tourist arrival in 2022 after the 2019-2021 decline (Figure 1).

Comparison on number of tourist arrivals between 2015-2018 and 2019-2022 in CNP

The results showed a significant difference on number of tourist arrivals before Cyclone Idai and Covid-19 incidence ($p\text{-value} = 0.004$) indicating a general decline in number of tourists received (Table 1).

There is a significant difference on number of tourist arrivals between 2015-2018 and 2019-2022. Therefore, consecutive Cyclone Idai and Covid-19 negatively affected tourist arrivals in CNP.

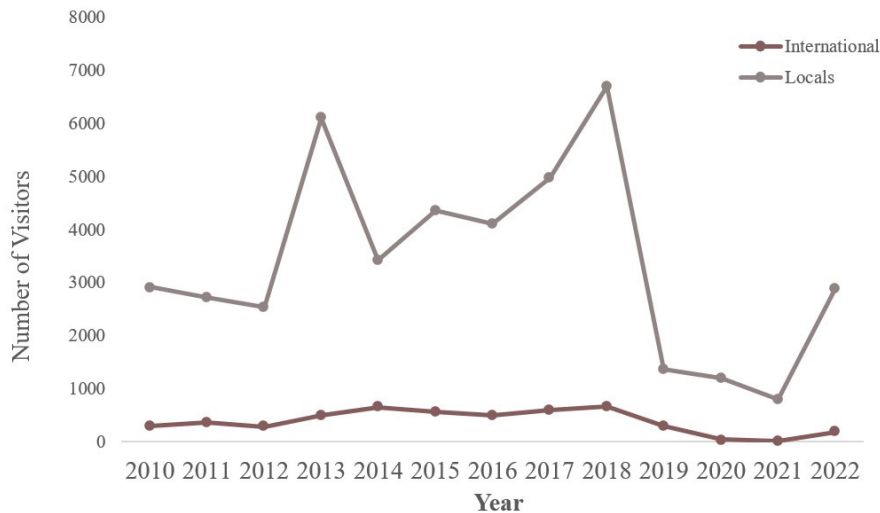


Figure 1: Time series analysis on tourist arrivals in the CNP (2010-2022)

Table 1: Two-Sample T-Test and CI: 2015-2018, 2019-2022 on number of tourist arrival in CNP

		Two-Sample-T-test for 2015-2018 vs 2019-2022 on tourist arrivals in CNP						
	n	Mean	StDev	SE Mean	95% CI	DF	T-value	P-value
2015-2018	4	5607	1240	620	(1898-5956)	5	4.98	0.004
2019-2022	4	1680	977	489				

Tourist Arrivals by Age and Region in the CNP

Tourists who came to CNP involved both local and international adults and children. A comparison on average annual tourists arrivals in the first four years (2015-2018) before Cyclone Idai and Covid-19 disturbance and with the last four years (2019-2022) during and after the disturbance shows that local adults were the most affected with average arrivals

decreasing from an average 3566.75 to 1222 (Figure 2). The decline represents 34.26% while international adults' arrival per annum decreased from 375.75 to 101.75 representing 27.08%. Local children decreased from 1465.5 to 330.25 representing 22.53% while international children arrivals drop by 13.22% from an average 198.5 per annum between 2015-2018 to 26.25 arrivals per annum between 2019 and 2022.

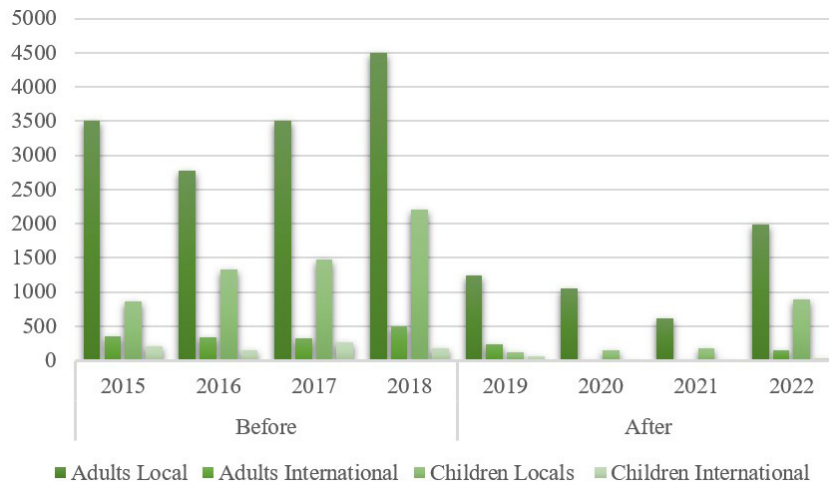


Figure 2: Number of tourist arrivals by age groups before (2015-2018) and during (2019-2022) in CNP.

Online and Printed Material Review

Online and printed literature were reviewed using key words, Cyclone Idai, Covid-19 in Zimbabwe, Tourism and Tourist arrivals in Chimanimani and Effects of Cyclone Idai and Covid-19 on tourism. Identified online materials include; Zimbabwe Tourism Authority (ZTA) tourism trends and statistics 2021 & 2022; Nhamo *et al*, 2021; Chikodzi *et al*, 2021; Chimanimani District food and

nutrition security profile report, 2022, Zimbabwe tropical Cyclone Idai and Covid-19 preparedness Assessment 2020, Chingombe and Musarandega, 2021, Masikati and Bhunu 2021 and local online newspaper. The reports highlighted that Tropical Cyclone Idai left a trail of destruction in CNP and the surrounding areas impacting tourist attractions, including natural, archaeological, cultural and scenic sites. Affected attractions include Chimanimani

Mountains bordering Mozambique and Zimbabwe, many curves, Tessa's Pool, as well as Bridal Veil and Digby's fall. Damage to road linking Chimanimani Town and Skyline-Chimanimani Road occur with five bridges swept away. In the Park Bridal Veil, Base camp and Vimba roads were also damaged. Base camp and Corner Camp camping sites were damaged. The powerline and communication networks were also removed.

DISCUSSION

Trend in Tourist arrivals in CNP (2010-2022).

Results report a drop in tourist arrivals in the consecutive period of tropical Cyclone Idai and Covid-19 that also affected CNP. The year 2021 records the lowest number of tourist arrivals for both locals and internationals. The decline is attributed to damage to access roads and bridges linking CNP as well as travel restrictions and/or self-safety concerns associated with outbreak of Covid-19 and post Cyclone Idai incidence. As a result, the restriction affects both local and international travels to CNP. The decision of tourists to limit international travel could be linked to personal safety reasons (Zou & Yu, 2022) and or through government related regulations (Kumar & Ekka, 2023) for example in 2020, Zimbabwe was labelled a Covid-19 red zone together with other five african countries (South Africa, Botswana, Lesotho, Eswatini and Namibia) by the United Kingdom. After the outbreak of the Covid-19 pandemic, international travels were temporarily restricted while at national level, intercity restriction were also set where travelling were only allowed from 9.00 to 15.00h. However, a recovery in 2022 could have been a result of relaxation of travel restriction in some parts of the world in 2022, hence allowing international travels. The results were a recovery in tourist arrivals in CNP. It is likely that the improvement in tourist inflows could be related to tourists who wanted to witness the after effects of Cyclone Idai disaster.

Connectivity to Chimanimani was cut when roads and bridges were swept away by Cyclone Idai floods (Masikati & Bhunu, 2021). There are no airstrips in CNP as well in the vicinity that can be used by tourists and other visitors due to its ragged terrain. Connectivity challenges could have affected tourist arrivals in CNP. Chimanimani is linked by only one main road which had its bridges removed by floods and reconstruction of the major bridges took a couple of months before completed. The Sunday Mail of 06 December, 2020, reports tourism activities in Chimanimani come to an abrupt end on March 15, 2019 and two years after Cyclone Idai and several months under the corona virus induced lockdown, tourism activities were still down.

Local adults were the most affected with 34.26% decline compared to international adults, local and international children 27.08%, 27.53% and 13.22% respectively. Although they were the mostly affected, local adults and children visits remained higher compared to international adults and children and this is related to restriction of gathering in public places, closure of

entertainment centres hence locals around Chimanimani only opt to visit local attractions nearby on foot. Moreso, records of adults coming as individuals were reported. Number of children decline and this was associated with assumption that mobility in large numbers was linked with agglomerations of tourists from different areas. Agglomerations of large groups foster multiple outbreaks of Covid-19 (Sacramento, 2023). Decline in international tourists could have also been a results of local government response to curb corona virus spread through restrictions at ports of entry. The number of international tourist arrivals declined by 74% in 2020 globally. Most destinations in Africa, arrivals were down by 80-90% before worsening at the beginning of the year 2021. (Vanzetti & Peters, 2021).

Impact of Cyclone Idai Disaster and Covid-19 Pandemic in Tourist Arrivals and Infrastructure in CNP

Tropical Cyclone Idai posed a multi-faceted threat to tourism activities and facilities in CNP. The tropical Cyclone Idai impacted the destination by inflicting physical damage to infrastructure and damaging road network linking Chimanimani with the rest of Zimbabwe. The damage were a result of flooding and landslides causing mudflows and rockfalls. Nhamo *et al.*, (2021) noted that of the top attractions affected by Tropical Cyclone Idai were roads linking Chimanimani, and a number of attractions including many curves used for camping, Tessa's Pool, Bridal Veil falls and Digby' Falls. In Chimanimani area, since the onset of Covid-19, millions of people have felt the socio-economic burden of the disease while it has also claimed thousands of lives and infected tens of thousands people in a district with population estimated around 54 000 people. After the pandemic caused havoc, governments of several states put intervention strategies that include series of lockdowns, quarantines, social distancing measures, banning of super spreader events, masking up and sanitisation (Lone & Ahmad, 2020). Zimbabwe experienced at least three Covid-19 waves and the pandemic spread widely and rapidly enough affecting also Chimanimani District. Zimbabweans, including national parks workers were asked to work from home (Masikati & Bhunu 2021) hence tourists guided walks offered by Parks staff were also affected and this meant that tourists have to cancel or suspend their trips to CNP.

Effects of Cyclone Idai and Covid-19 on Tourist Arrivals in CNP

Disasters can lead to a reduction in visitation to the affected area for several reasons linked to the aftermath of disasters and global pandemics (Bhati *et al.*, 2016). Some of the reasons can be related to damage inflicted by a disaster that prevents the affected areas from engaging in tourism activity including connectivity, and infrastructure damage and tourist's risk perceptions to avoid regions that are deemed unsafe (Kozak *et al.*, 2007).

Damage to infrastructure like roads and conversion

of tourist facilities like the Chimanimani Hotel to accommodate affected families could have resulted in cancellation of bookings and/or rescheduling of bookings to CNP. Conversion of facilities for humanitarian assistance leads to limited accommodation options for visitors hence affecting overall visitor arrivals in Chimanimani. Chimanimani Hotel, for example, become one of the first relief centres, which accommodated and fed approximately 600 victims in the first two weeks of the disaster (Nhamo & Chikodzi, 2021) while a dozen stayed at the place for more than a year.

Disruption of transportation systems as a result of damaged road affects tourists to reach their intended destinations while Covid-19 restrictions affected intercity travels locally. According to Masikati & Bhunu (2021) these disruptions forced domestic tourists to cancel scheduled meetings at some holiday resort areas in Chimanimani. Records show that a year after the tropical cyclone left a trail of destruction in Chimanimani, several contractors were still working on roads and bridges while supply of some equipments were affected as a result of Covid-19 measures to curb transmission. The Skyline-Chimanimani road project was completed in February, 2020 which is the main link road.

The Tropical Cyclone Idai was declared state of disaster by the government of Zimbabwe on 15 March 2019. The declaration of tropical Cyclone Idai as a national disaster was a major concern for tourists. This affects tourist's decisions to choose a destination when preparing their trip and place of stay (Bausch *et al*, 2021). Natural disasters cause traumatic experiences for the resident population and may cause lasting damage to destination infrastructures (Hystad & Keller, 2008). It is possible, after the tropical Cyclone Idai, tourists' perceived CNP as a risk destination in the early weeks after the event. These safety concerns contributes to significant decline on tourist arrivals and destination activities. Even after the immediate danger has passed, the lingering perception of ongoing risk could have affected potential tourists from visiting affected attractions.

CONCLUSION

There is evidence consecutive tropical Cyclone Idai damages and Covid-19 pandemic negatively affected tourist arrivals in CNP from 2019-2022. Cyclone Idai disrupted connectivity to Chimanimani as well as to attractions in CNP, while Covid-19 pandemic restricted global movement, including intercity travel at national level, as a result of temporal measures imposed by the local government and the World Health Organisation. Different groups of tourists were affected. Future researches may quantify in monetary value, total losses incurred for CNP as a result of consecutive Cyclone Idai and Covid-19 pandemic as well determining new health and safety protocols that can be put in place in response to future similar events.

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