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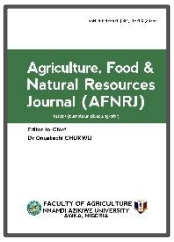

Original Article

Impact of conservation outreach programmes on the attitude of support zones dwellers in Gashaka-Gumti National Park, Nigeria

OPEN ACCESS

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ABSTRACT

Outreach programmes on conservation played a significant role in promoting conservation objectives by affecting people's attitudes and behaviour towards wildlife conservation and protection of their environment. This study aimed at evaluating the impact of conservation outreach programmes on the awareness and attitudes of support zones and enclave dwellers towards wildlife conservation in Gashaka Gumti National Park, Nigeria. The research procedure involved the stratification of the study area into six ranges. The purposive sampling technique was used in selecting settlements, while random sampling was used for respondents. Structured questionnaires were used for the collection of data. The data obtained were subjected to descriptive (frequency and percentages) and inferential statistics (t-test at 95% probability level). Results obtained indicated the occurrence of outreach programmes such as extension (20.19%), school visits (15.46%), special campaigns (26.17%), television broadcasts (10.15%), printed materials (36.55%), and radio jingles (38.96%). The rate of occurrence of outreach programmes indicated monthly (27.88%) and quarterly (28.21%) as the most frequent. Affirmations of the positive impacts of outreach programmes on awareness and attitudes were 77.83% - 93.48% for awareness and 67.31% - 92.03% for attitudes. The occurrence of wildlife conservation outreach programmes in the support zone communities of Gashaka Gumti National Park impacted positively on the residents' awareness and attitudes, resulting in a positive outcome. It is therefore recommended that the content, strategies, and intensity of the outreach programmes be improved upon for greater success of the programmes.

KEYWORDS: *Attitude, Awareness, Respondent, Wildlife, Willingness*

INTRODUCTION

Protected areas are a key approach to global ecological conservation efforts and are recognized as the most important way to protect species in their natural habitats (Watson *et al*. 2014). Over the last decades, massive efforts have been made to manage protected areas using diverse strategies including public outreach programmes (Vimal *et al*., 2021). Public outreach programmes on conservation played a significant role in promoting conservation objectives by affecting people's attitudes and behaviour towards wildlife conservation and protection of their environment (Meduna *et*

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al., 2009). Equally, understanding factors which influence attitudes is important to enable wildlife administrators to implement approaches that attract support of stakeholders and the general public. Rosser *et al.* (2005) observed that public support and involvement is vital in achieving wildlife conservation goals. They further reported that the creation of effective knowledge and awareness of wildlife conservation issues among the public can be achieved through conservation outreach programmes, which he referred to as a branch of conservation education. The focus of conservation outreach programmes is based on communication and information targeted at a non-captive audience in social and novel surroundings and aims at fostering sustainable behaviour and, improving public support for conservation of wildlife resources (Meadows, 2011).

According to Gideon (2015), who reported that conservation outreach programmes provide the public with the opportunity to gain awareness or sensitivity to the environment, knowledge and experience of the problems surrounding the environment, acquire a set values and positive attitudes, obtain the skill required to identify and solve environmental problems the motivation and ability to participate while Molina *et al* (2017) reported that conservation education actualizes eco friendliness, makes the citizens to engage in positive environmental actions that protect the natural ecosystems, wilderness areas and nature reserves, and helps in creating awareness and understanding about the ecosystem and some conservation issues that surround nature. Hence, Jacobson *et al.* (2006) established that proper conservation outreach programmes contributed immensely to sustainable wildlife conservation.

Yaduma *et al*. (2020) and Tsi *et al*. (2008) demonstrated that in people who inhabit areas surrounding National Parks territories in Gashaka-Gumti National Park, Nigeria and Northern Cameroon had less formal education and may be classified as illiterates hence may be prone to wildlife crimes. However, studies investigating the awareness, perception and attitude of communities around the protected areas towards biodiversity conservation outreach programmes in the context of the study area are scanty (Yaduma *et al*., 2020). Information on the perception of local communities living in and around protected areas is important to integrate the diversity of management strategies that best suit the protection of biodiversity alongside the development of local community livelihoods into conservation plan (Vimal *et al.*, 2021). Therefore, this study was conducted in the Gashaka-Gumti National Park, Nigeria to assess the awareness, perception and attitude of support zones and enclave dwellers towards wildlife conservation outreach programmes for sustainable management.

MATERIALS AND METHOD

Description of the study area

Gashaka Gumti National Park (GGNP) is located North Eastern region of Nigeria between latitude 6°45' to 8° 15' N and between longitude 11° 0' to 12° 15' E (Figure 1). GGNP was established in 1991 and represents Nigeria's largest National Park covering about 6731 km^2 (Dunn, 1999). It is known for its exceptionally high biodiversity and represents an important conservation area. From the edge of the Mambilla plateau in Taraba State, GGNP stretches northwards along the international border with Cameroon and Africa's Gulf of Guinea forests, on into Adamawa State as far as the small town of Toungo (Oates *et al.*, 2004). The vegetation is a mosaic of Southern Guinea savannah- woodland, open (montane) grassland, lowland forest, swamps and montane forest (Warren, 2003) and is home to a highly diverse number of small and large mammals, including nine primate species. The Park has the highest mountain peak in Nigeria which is called the Chappal Wadi also known as Gangirwa (mountain of death) with a height of about 2400m above sea level (Dunn, 1999). Like any other park in Nigeria, GGNP was established as a protected area for the purpose of nature conservation, recreation, ecotourism, scientific and medical research and to promote art, craft and cultural value of the indigenous people surrounding the park (Marguba, 2002).

Study Design and Data Collection

The study area was stratified according to the ranges (management divisions) that make up the park. There are a total of six ranges in the park. Five settlements were randomly selected from each range. Only residents without formal education, who have lived in the settlements for ten years and are above twenty-five (25) years of age were randomly selected to serve as respondents. Social survey study was used to obtain primary data which include socio-economic characteristics of the support zones and enclave dwellers, the occurrence, types and rate of conservation outreach programmes in the study area, awareness of basic concepts of wildlife conservation as well as perceptions and attitudes of the people towards conservation of wildlife resources. Secondary data on trends of some wildlife species populations in the park were obtained through the review of park records and literatures. Attempt was made to obtain record of arrest for the past ten tears. However, inconsistent record of arrest made it impossible. Hence, trends in some key wildlife species populations were used to determine outcome of conservation outreach programmes. During the visit, the ranges and the settlements in and around the park were documented.

Sample Size

Ten percent (10%) of the total population in each settlement served as the sample size following Osunsina (2009) report that for communities with populations higher than 1,000, at least one percent (1%) of the population should be sampled. However, Agu (2003) stated that the larger the sample size, the smaller the magnitude of the sampling error. Hence, for this study 10% sample size was chosen as over 90% of the populations of the settlements within ranges were below 1000.

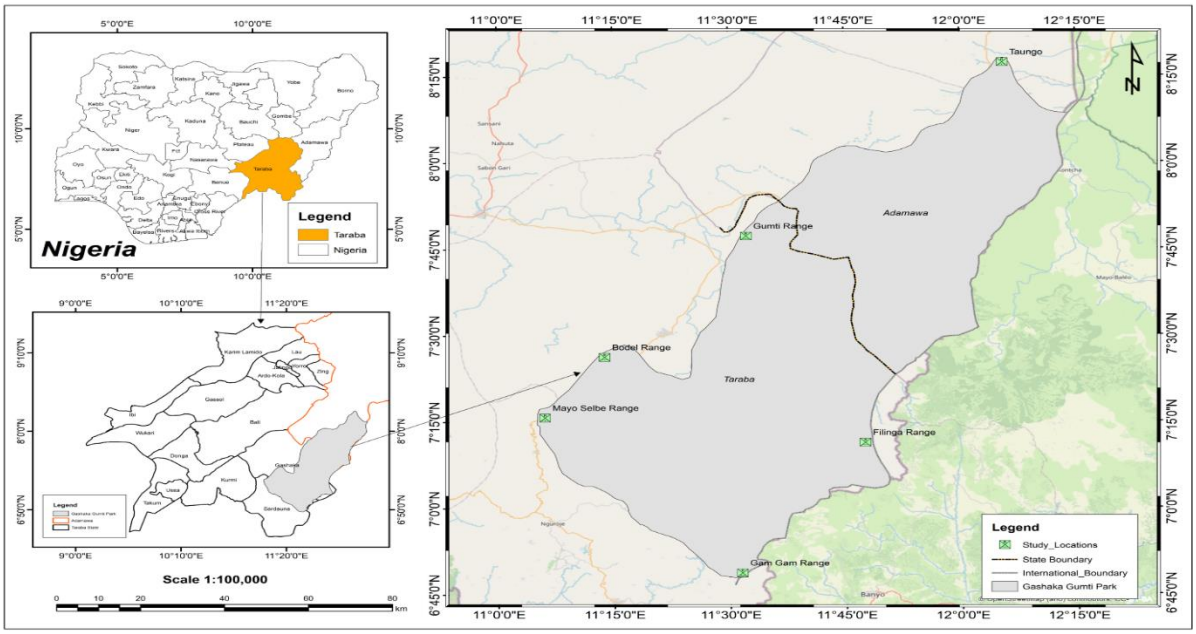

Figure 1. Map of Gashaka-Gumti National Park showing some surrounding communities.

Sampling Technique

The simple random sampling method was used to select settlements from each range and respondents (male or female) from the settlements. The procedure involved the generation of random numbers for each element in the sampling frame using the sample size. Excel was used to perform the selection of the random numbers. Every element (household) from which one respondents (male or female) was selected for administration of questionnaire. Total numbers of questionnaire administer in support zones and enclaves was 1,388. A total number of 1,276 was retrieved.

Sampling Tool

The sampling tool was structured questionnaire with open and closed-ended questions. Questionnaire was designed and administered to the support zone and enclave dwellers.

Statistical Analysis of Data

Data on the impact of conservation outreach programmes on occurrence, awareness, and attitudes of support zones and enclave dwellers towards wildlife conservation in GGNP was analysed using:

a. Descriptive statistics such as frequencies and percentages.
b. The t-test; this was used to establish whether the outreach programmes did significantly affect the awareness of respondents or not, and if their attitude is significantly affected positively or not. The t-test model is as follows:

$$t = \frac{x_A - x_B}{\sqrt{\frac{S^2\,(n_A + n_B)}{(n_A)(n_B)}}} \qquad (1)$$

Where: , $\overline{X_A}$ and $\overline{X_B}$= arithmetic means for groups A and B, n_A and n_B = Number of observations in group A and B, S^2= Pooled variance.

Table 1: Sample population, sample sizes and number of questionnaires retrieved from each of the ranges in the study area

Park Ranges	Total Population	Number of Questionnaires Administered	Number of Questionnaires retrieved
Gamgam	1,053	105	104
Bodel	1,180	118	110
Fillinga	1,360	135	121
Mayo-Selbe	7557	756	663
Gumti	1140	114	107
Toungo	1450	145	138
Total	**13,740**	**1.373**	**1,243**

RESULTS

Occurrence of Conservation Outreach programmes in the study area

Results (Figure 2) of the occurrence of conservation outreach programmes in Gashaka Gumti National Park (GGNP) showed that majority of the respondents in Gamgam (53.85%), Mayo-Selbe (65.01%), Fillinga (65.58%) and Toungo (81.88%)

indicated that conservation outreach programmes occurred in their ranges. However, majority of the respondents in Bodel (57.24%) and Gumti (52.37%) indicated non-occurrence of conservation outreach programmes in their ranges.

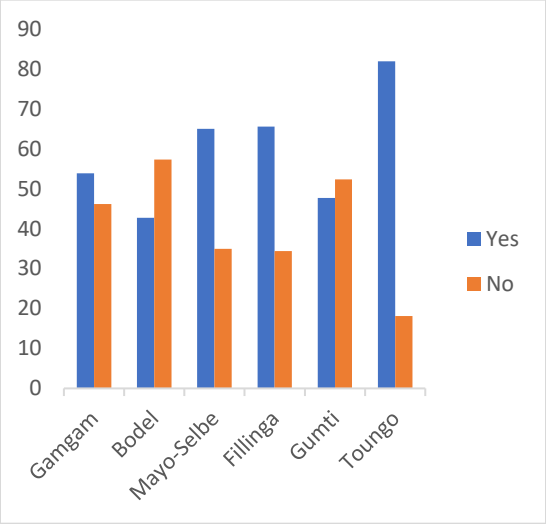

Figure 2. Occurrence of Conservation Outreach programmes in the study area

Source: Field Survey, (2023)

Occurrence and types of Conservation Outreach programmes in GGNP

Indications of types of Conservation Outreach programmes occurring in GGNP showed that they include extension programmes, school programmes, special campaign programmes, printed materials, radio jingles and TV programmes (Table 2). Result of the occurrence of these conservation outreach programmes in the study area revealed that radio jingles (36.55%), extension programmes (20.19%), printed materials (20.19) and special campaign programmes (14.42%) featured more in Gamgam range. In Bodel range, radio jingles (28.18%), special campaign programmes (24.54%), printed materials (16.36%) extension and school programmes (15.46%) had the highest occurrence in the range. In Mayo-Selbe, radio jingles (51.73%), printed materials (19.61%) special, campaign programmes (16.59%) and extension programmes (10.41%) occurred more than others. Indications in Fillinga range, showed that radio jingles (38.96%), extension programmes (19.48%), printed materials (14.93%), and special campaign programmes (14.29) occurred most. In Gumti range, radio jingles (28.04%) had the highest occurrence. In Toungo range, radio jingles (28.98%) had the highest occurrence followed by extension programmes (23.91%) and special campaign programmes (22.42%). Overall, the result of occurrence of conservation outreach programmes indicated that radio jingles, special campaign programmes, printed materials and extension programmes occurred most in the study area.

Rate of Occurrence of Conservation Outreach Programmes in the Support Zones and enclaves within the ranges in GGNP

Result of the rate of occurrence of conservation outreach programmes in GGNP is presented in figure 3. Indications from the result showed that the conduct of conservation outreach programme was more of monthly (27.88%) or occasional (23.08%) event in Gamgam range. In Bodel range, it was more of an occasional event (35.78%) or once in a year (20.91%). In Mayo-Selbe range, it was conducted mostly quarterly (28.21%), or occasionally (25.94%). In Fillinga range, the result indicated that the outreaches occurred mostly yearly (41.56%) or occasionally (33.12%), while that of Gumti range showed that outreaches occurred mostly monthly (31.78%) or occasionally (27.10%). Indications of the rate of occurrence of conservation outreach programmes in Toungo range, showed that the outreach programmes were carried out mostly quarterly (37.08%), while at some periods it occurred occasionally (20.29%).

Table 2. Awareness of different Conservation Outreach programmes occurring in GGNP

Outreach Programmes	Frequencies and percentage rate of awareness in each range					
	Gamgam	**Bodel**	**Fillinga**	**Mayo-Selbe**	**Gumti**	**Toungo**
Extension Programmes	21 (20.19)	17 (15.46)	30 (19.48)	69 (10.41)	33 (22.43)	33 (23.91)
School Programmes	9 (8.65)	17 (15.46)	19 (12.34)	11 (1.66)	6 (5.61)	12 (8.70)
Special events	15 (14.42)	27 (24.54)	22(14.29)	110 (16.59)	38 (26.17)	18 (13.04)
Printed Materials	21 (20.19)	18 (16.36)	23 (14.93)	130 (19.61)	19 (17.75)	21 (15.22)
Radio jingles	38 (36.55)	29 (28.18)	60 (38.96)	343 (51.73)	30 (28.04)	40 (28.98)
TV Broadcast	-	-	-	-	-	14 (10.15)
Total	104 (100)	108 (100)	154 (100)	663 (100)	117 (100)	138 (100)

Source: Field Survey (2023)

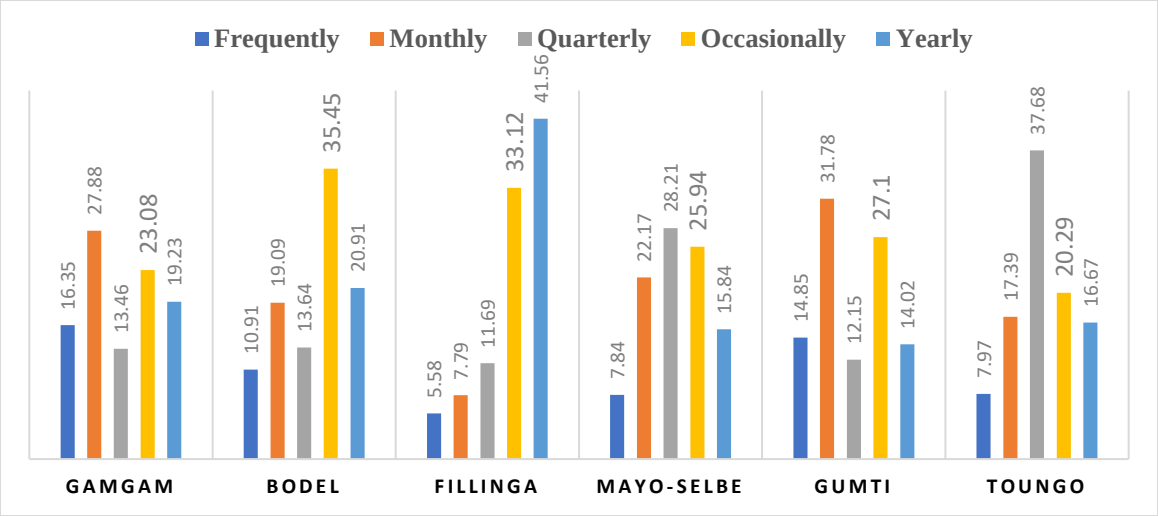

Figure 3. Rate of occurrence of conservation outreach programmes in the Support Zones

Source: Field Survey, 2023

Impact of outreach programmes on Awareness of Conservation in the Support Zones and enclaves

The level of awareness on the importance of wildlife resources aesthetically, medically, educationally, scientifically, economically and ethically was established. Indications of the results of Respondents awareness of the statement (Table 3) showed that majority of the respondents in all the ranges admitted that they were aware of the importance of wildlife resources. The indications according to the ranges in terms of respondents who were aware are as follows: Gamgam range (83.65%), Bodel range (87.82%), mayo-selbe range (88.24%), Fillinga range (87.01%), Gumti range (90.65%), and Toungo range (88.41%). T-test analysis result carried out between respondents who were aware and those who were not aware of the concept showed that those who are aware are significantly higher ($p \leq 0.001$) than those who are not aware of the concept (Table 4).

Table 3. Impact of conservation Outreach programmes on Awareness of Conservation in the Support Zones and enclaves in the Study area

Ranges	% Rates of Awareness	
	Aware	**Not Aware**
Gamgam	83.65	16.35
Bodel	81.82	18.18
Fillinga	87.01	12.99
Mayo-Selbe	88.24	11.78
Gumti	90.65	9.35
Toungo	88.41	11.59

Source: Field Survey, 2023

Table 4. Significant of conservation outreach programmes on awareness of conservation in the support zones and enclaves in the study area (T – test)

Sample	Size	Mean Deviation	Variance of mean	Standard	Standard Error	P<F
No_Awareness_1	30	5.37	43	6.53	1.192	0.001
Yes_Awareness_1	30	37.03	2351	48.49	8.852	

Source: Field Survey, 2023

Impact of Conservation Outreach Programmes on the Attitude of Respondents in the Support Zones and enclave dwellers in GGNP

The result of the impact of conservation Outreach programmes on the attitude of the respondents in respect of willingness to support every action that can lead to conservation of wildlife resources in the park is presented in Table 5. The result showed that majority of respondents in Gamgam (75.00%), Bodel (74.55%), Mayo-selbe (79.49%), Fillinga (79.87%), and Toungo (92.03%) ranges have the willingness to support every action that can lead to the conservation of wildlife resources in the park while the attitude of the majority of respondents in Gumti range (62.62%) indicated that they were not willing to support actions that can lead to the conservation of wildlife resources in the park. T-test analysis (Table 6) between those who were willing and those who are not willing to support the conservation wildlife resources in the park showed that those who are willing to support wildlife conservation of in the park were significantly higher ($P \leq 0.05$) than those who were not willing.

Table 5. Impact of conservation Outreach programmes on Attitude of Respondents in the Support Zones and enclave dwellers in GGNP

Ranges	% Rates of willingness (attitude) to support conservation actions	
	Aware	Not Aware
Gamgam	75.00	25.00
Bodel	74.55	24.45
Fillinga	79.87	20.13
Mayo-Selbe	79.49	20.51
Gumti	37.38	62.62
Toungo	92.03	7.97

Source: Field Survey, 2023

Table 6. Willingness to support every action that can lead to conservation of wildlife resources in the park (T – Test)

Variables	Size	Mean Deviation	Variance of mean	Standard	Standard Error	P<F
No_willingness_1	30	10.00	152	12.35	2.254	0.012
Yes_willingness_1	30	32.53	2008	44.81	8.182	

Source: Field Survey, 2023

DISCUSSION

Indications from the results on occurrence of conservation outreach programmes in the study area revealed the occurrence of outreach programmes in all the ranges and sectors of Gashaka Gumti National Park. Conservation education has been observed as bedrock for imparting awareness and adequate knowledge, skills, commitment and positive attitude for the overall conservation of the environmental resources including wildlife resources. Therefore, the implication of the occurrence of conservation outreach programmes in GGNP is the likelihood that the residents in the support zones and enclaves of the park are sufficiently informed about the importance and the needs to conserve wildlife resources. This observation agrees with the report of Doley and Barman (2023) that conservation education outreach could be used to create knowledge for wildlife conservation.

The findings of the study also revealed that a wide range of conservation outreach programmes have occurred in the park over the years, most of which are non-formal in nature. These ranges from extension programmes, special campaign programmes, printed materials to radio jingles, which are mostly based on environmental ethics and self-control subject matter that could meet the needs of a local region. The dominant outreach programmes prevailing in the study area as revealed in this study could influence the target audience who are mainly resident with non-formal education. The findings and observation are in tandem with the report of Molina *et al* (2017), and Maddatuang *et al* (2020) who posited that for conservation outreach programmes to succeed, they must adopt outreach strategies that consider local environment while still ensuring that materials create knowledge, awareness, perceptions, skills and the right attitude towards conservation.

Findings from the rate of occurrence of conservation of outreach programmes in the study area showed that the majority of the respondents in four out of the six ranges indicated that the outreach programmes occurred either monthly or quarterly. The implication of this result considering the frequency and diversity of the outreach programmes is that, there is the likelihood of creating attitudinal change among the audience. This observation agrees with report of Thompson and Hoffinan (2003) that appropriate reinforcement can create a strong sense of motivation among an audience.

The study revealed the effectiveness of conservation outreach programmes in the study area. Indications of the result on the effect of the outreach programmes on the target audience showed that the majority of the residents are aware of the importance of wildlife conservation. The implication of the result is that the conservation outreach programmes might have succeeded in inculcating in the audience, the knowledge or awareness of wildlife conservation concepts, in view of the fact that those who were aware of the concepts are significantly higher than those who are not aware, in all the ranges of the park. This observation is in consonance with the report of Meadows (2011) that the success of conservation outreach programmes involves the measure of key indicators of success such as change in the audience knowledge or awareness.

Indications from the results of the impact of conservation outreach programmes on the attitude of respondents indicated positive attitude. This is because the majority of respondents indicated willingness to support every action that can lead to the conservation of wildlife resources in the park. These findings actualize the report of Ntuli & Muchapondwa (2018) among the local residents. The report observed that people's perception of wildlife benefits, positively influence their ability and willingness to support the conservation of wildlife resources. It therefore, implies that social perceptions towards wildlife is of critical importance in fostering positive attitude or behaviour towards wildlife resources, which in turn determines the success of conservation of wildlife resources. Overall, these

observations are at variance with the report of Thompson & Hoffinan (2003) that conservation education is capable of actualizing positive values into minds of individuals or society towards nature and consequently making their behaviour to be consistent with their values towards conservation of wildlife resources.

CONCLUSION AND RECOMMENDATION

This study revealed that conservation outreach programmes occurred in the study area, which include extension programmes, school programmes, special campaign programmes, Television Broadcast, Printed Materials and Radio Jingles. Most of the programmes occurred either monthly or quarterly in most of the ranges. There were indications of high level of awareness of wildlife conservation and considerable positive attitude toward wildlife conservation among the respondents. The findings showed that responses indicating knowledge of the awareness of wildlife conservation drive and positive attitude were significantly high in the study area. Hence, the research recommend conservation outreach programmes.

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Authors' Contributions

Author ZBY managed literature searches and material support. Authors GKP managed the managed data collection, interpretation of data, writing of manuscript. Author CA managed the development of methodology while Author GTA managed review of manuscripts and wrote the first draft of the manuscript. All authors read and approved the final manuscript.

Ethical Statement

Not applicable

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