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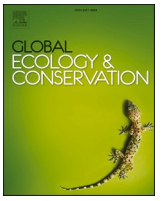

Impact of outreach programmes on the relationship between local people and parks. Perceptions of communities near Tarangire National Park, Tanzania

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ABSTRACT

Understanding the impact of outreach programmes on local people and parks is vital for long-term park protection, especially in developing countries. This study assessed how community outreach programmes (COPs) can strengthen relationships between local people and Tarangire National Park (TNP). A questionnaire survey of 200 households from 4 villages (n = 50 households for each village) was used for data collection. The study results show that people with formal education were happier about activities initiated by COPs and were more likely to be willing to report poachers to park management. Furthermore, middle-aged and older people in the study area were happier on various activities initiated by COPs than young people. Seventy-eight percent (n = 156) of the respondents were happy with the conservation activities initiated by the Community Outreach Programmes. In addition, nearly half of the respondents (49%, n = 98) said they would report poachers to the park authority. When local people are happy about different activities related to conservation, they are more likely to be good custodians of nature and even more willing to report poachers to park management. Therefore, to enhance mutual cooperation between parks and local communities, people surrounding protected areas in different parts of the world should be actively involved in different conservation activities.

1. Introduction

The active participation of local communities in conservation activities is critical to ensuring the long-term protection of protected areas, especially in developing countries (Abukari and Mwalyosi, 2020; Aronson and Figueroa Benavides, 2006; Dickman, 2010; Ebua et al., 2011; Mavah et al., 2018). Many African countries have progressed from colonial ("fences and fines") to participatory wildlife management. This colonial approach was referred to as fences and fines, in which the fences approach meant people were not allowed to cross protected area boundaries, and the fines approach meant that people were fined when found inside protected areas (Kideghesho, 2010; Newmark and Hough, 2000). This colonial approach exacerbated tensions and increased hostility between park officials and local residents (Kideghesho, 2010; Newmark and Hough, 2000; Sosiya, 2016). When local people were found inside the parks and/or when livestock crossed park boundaries, park authorities reacted strongly, such as shooting people and/or killing livestock (Kideghesho, 2010). These situations increased hostility toward the protection regime (Davis, 2011). This approach created enmity

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between protected area actors and nearby people (Kideghesho, 2006; Sosiya, 2016). However, recently, due to the involvement of the general public in making conservation decisions and an increase in public freedom to express their complaints to the Tanzanian government, most conflicts associated with park boundaries have been solved without violating locals' rights (Burgoyne and Mearns, 2017).

Living close to protected areas has both advantages and disadvantages for local people (Mbise, 2021, 2022b; Sosiya, 2016). Advantages include tourism activities that have a multiplier impact on communities' livelihoods, such as selling farm produce to tourist hotels and employment in tourism companies (F. P. Mbise personal observation). Disadvantages include crop damage and/or livestock depredation (Kideghesho, 2006; Newmark and Hough, 2000; Sosiya, 2016). Both of these events have an effect on the way people in the area think about wildlife conservation (Bennett, 2016; Kideghesho, 2010; Sosiya, 2016). For example, the Tanzania National Parks Authority (TANAPA), a parastatal organization, has managed national parks and collaborated with surrounding communities for 50 years. Involving local people in conservation activities through community outreach programmes (COPs) facilitates benefit sharing between park authorities and locals (Emerton and Mfunda, 1999; Kideghesho, 2006). For the purposes of this study, "community outreach programme" refers to conservation activities that are extended outside the national park boundaries to the surrounding communities, with the goal of encouraging local communities to be active participants in all activities related to park conservation and protection while also reaping the benefits associated with the park's presence (Sosiya, 2016; TANAPA, 2021). Common benefits that communities surrounding protected areas obtain from parks are schools, health centres, water developments, and roads (Emerton and Mfunda, 1999; Gillingham et al., 1999; TANAPA, 2021). Benefit sharing increases community participation in conservation activities, creates good neighbourliness, and shapes responsible behaviour by locals toward conservation activities (Kideghesho, 2006; TANAPA, 2021).

Benefit sharing and community participation in conservation activities normally help to create a good relationship between parks and local communities. These local communities bear most of the costs that are associated with living adjacent to protected areas. Therefore, when benefits outweigh costs, these communities realize benefits related to conservation activities in their vicinities (Colchester, 2004; Kideghesho, 2008; Newmark and Hough, 2000). Most of these benefits are realized at the community level and therefore are not necessarily tangible at an individual level (Karanth et al., 2012; Kideghesho, 2006; Newmark and Hough, 2000; Tchakatumba et al., 2019). Consequently, when people living adjacent to protected areas are involved in conservation projects, it will help the community understand how park benefits are shared equitably between the park and local communities (Anthony, 2007;

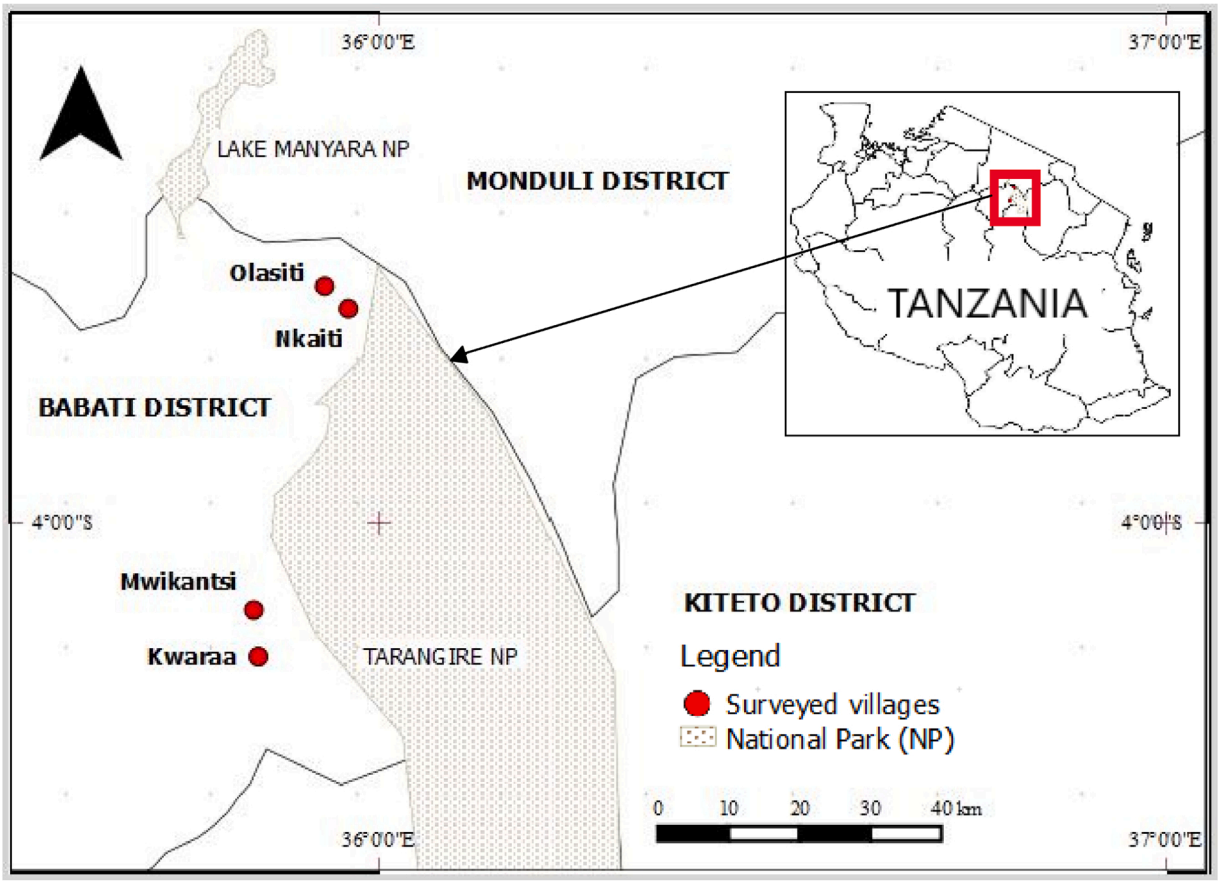

Fig. 1. Map of Tarangire National Park in Tanzania and study villages (red dots) found in Babati district.

Mbise, 2022a). A good relationship between communities and the park authority is an indicator of how happy local people are concerning COP initiatives related to local conservation activities (Mashauri, 2017). When local communities are dissatisfied with conservation benefits and COP initiatives, they are less likely to notify park authorities about illegal entrants (i.e., poachers) (Sosiya, 2016). If this type of incident occurs frequently, all efforts to protect and conserve protected areas will be jeopardized. Conservationists now know that the paradigm of sustainable conservation cannot be reached without the help of local communities (Anthony, 2007). Hence, communities living adjacent to protected areas play a critical role in achieving this goal. It costs the government less to protect protected areas when local people are happy with conservation initiatives (Kideghesho, 2006; Mbise, 2022a). Therefore, when the relationship is weak, people's unwillingness to report poachers has a significant impact on conservation efforts. Furthermore, willingness to report poachers to the park authority is indicated when local people report poachers without being paid. When local people report poachers without being paid, it reveals how strong the relationship is between park authority and locals (Davis, 2011; Newmark et al., 1993).

Furthermore, various factors influence community happiness; however, these are context dependent, depending on culture and economic capabilities (Allgood et al., 2019; Lyubomirsky and Lepper, 1999; Peterson et al., 2005). Happiness is inherently subjective, making it difficult to define and quantify (Seligman, 2012). Because the term "happiness" is so broad, it is best discussed from a psychological standpoint. When local communities are happy about conservation initiatives, their happiness will influence conservation attitudes (Alessandrini, 2019; Allgood et al., 2019). For that reason, we concentrate on how people are only satisfied with various initiatives carried out by the community outreach programme for the sake of national park conservation and protection across their age, gender, level of education, occupation, and distances from the park boundary. Understanding these patterns gives some highlights, as having a happy community living adjacent to parks means that these people will be more cooperative in many aspects related to the park's conservation initiatives (Alessandrini, 2019).

Therefore, the general objective of this study is to assess how COPs can strengthen the relationship between local people at the household level and the Tarangire National Park authority (TNP). The specific objectives were to (1) assess the factors that influence locals' happiness regarding COPs and (2) assess the factors that influence locals' willingness to report poachers to the Tarangire National Park management.

2. Methods

2.1. Study area

Tarangire National Park (TNP) (Fig. 1) is in Babati district, the northern tourism circuit of Tanzania. Babati District is geographically found in the northeast of Tanzania between latitude 3.0–5.0° S and longitude 35.0–37.0°E. TNP covers an area of 2850 km^2 and is Tanzania's third-richest park in terms of biodiversity (Sosiya, 2016; TANAPA, 2021). Tarangire NP is recognized for its large population of African elephants (*Loxodonta africana*) (MNRT, 2015). Furthermore, TNP has a semiarid climate with rainfall averaging 645 mm per year while the temperature ranges between 10 °C and 25 °C (Hariohay, 2013; Sosiya, 2016). This study focused on four villages near the park's boundary: Mwikantsi, Olasiti, Nkaiti, and Kwaraa. The average population size of all these villages was 1863 inhabitants, and each household had an average of four members. In these villages, 50 households constituted more than 10% of the population.

2.2. Data collection

We collected data using a questionnaire survey with closed-ended questions from June to August 2015. The questions (Table 1) assessed the relationship between community activities and wildlife conservation, distance from the park, damage caused by wildlife (e.g., livestock and/or crops), benefits gained because of the park, and locals' willingness to report poachers to park authorities.

Household names were drawn at random from the village registry. Only one respondent (above 18 years of age) represented each household. According to the Mbulu (85.2%) and Maasai (8.1%) tribes, only men have the right to speak to the public. Therefore, to respect their norms and culture, in the case of households that had both a husband and wife, the husband was chosen for the interview. Only one researcher asked all questions to maintain consistency. All people in the selected villages speak the Tanzanian national language (Swahili) fluently; therefore, there was no need for any translation to their local language. In Africa, especially in Tanzania, where the survey was conducted, when relevant permissions are obtained, the randomly selected local people feel highly respected and are always willing to participate. Therefore, the response rate was 100%.

Table 1
Interview questions and responses.

Questions	Responses in percentages
✓ Are you happy with conservation activities initiated by Community Outreach Programmes in your village?	✓ Happy (78%), Unhappy (22%)
✓ Will you report a poacher who crosses the park boundary or kills a wild animal to the park authority?	✓ Yes (49%), No (51%)

2.3. Data analysis

Data were analysed using SPSS version 24.0. The significance of each test was assessed using binary logistic regression with a confidence level of 95% ($p < 0.05$). The two questions, as described in the data collection section, used five independent variables, namely, age, gender, level of education, economic activity (occupation), and village distance from the park boundary (the variables and levels are explained in Table 2). Other variables were excluded from the model because they interacted with one another rather than being independent. This is because their relationships were directional (Table 2).

3. Results

3.1. Demographic and socioeconomic characteristics of respondents

Out of 200 respondents, 9.6% (n = 19) were youths, 53.6% (n = 107) were middle-aged, and 36.8% (n = 74) were elderly. Two-thirds, 68.9% (n = 138), were male, while 31.1% (n = 62) were female. Almost two-thirds (n = 123) had finished primary school, 16.3% (n = 33) had finished secondary school, and 22% (n = 44) had not. Farming (85.2%, n = 171), pastoralism (8.1%, n = 16), and other activities, such as small businesses and informal employment (6.7%, n = 13), were the most common social economic activities carried out by the respondents. One-third (34.9%, n = 70) had a small herd of cattle, 26.3% (n = 53) had a herd of cattle ranging from 10 to 30, 14.4% (n = 28) had a herd of cattle greater than 30%, and 24.4% (n = 49) had none. More than half (54.1%, n = 108) had land larger than ten acres, 23.4% (n = 47) had land between 10 and 30 acres, 11.5% (n = 24) had land larger than 30 acres, and 10.5% (n = 21) had none. The villages of the respondents were found at various distances from the park boundary: 3 km (25%, n = 50), 6 km (25%, n = 50), 7 km (25%, n = 50), and 9 km (25%, n = 50). The park's benefits were reported in three categories: 51.5% (n = 103) reporting the park as a source of employment (direct and indirect); one-third reporting the park providing social services to local communities (36%, n = 72); and providing other benefits such as selling cultural products, paintings, and farm produce to tourists' hotels (12.5%, n = 25).

3.2. Factors which influence locals' responses regarding COPs (happy or unhappy)

More than half of the respondents (61%, n = 122) agreed that community participation has a positive impact on outreach programmes, while 39% (n = 78) disagreed (Table 2). Seventy-eight percent (n = 156) of the respondents were happy with conservation activities initiated by the Community Outreach Programmes. A binary logistic regression was statistically significant for explaining the factors that influenced locals' responses regarding COPs ("are you happy with conservation activities initiated by the Community

Table 2
Characteristics of respondents (N = 200).

		Level	Range	Percentage
Independent Variables	Age in years	Youth	18–25	9.6
		Middle-aged	26–45	53.6
		Elder	> 46	36.8
	Gender	Male		68.9
		Female		31.1
	Level of education	Never attended school		22
		Primary education		61.7
		Secondary education		16.3
	Economic activity	Farming		85.2
		Pastoralism		8.1
		Other[1]		6.7
	Herd size (number of cattle)	None	0	24.4
		Small	< 10	34.9
		Medium	10–30	26.3
		Large	> 30	14.4
	Land size in acres	None	0	10.5
		Small	< 10	54.1
		Medium	10–30	23.4
		Large	> 30	11.5
	Village distance in km		3	25
			6	25
			7	25
			9	25
Dependent Variables	Benefits derived from TNP	Employment (direct and indirect)		51.5
		Social services		36
		Other[2]		12.5
	Community participation affects COPs positively	Agree		61
		Disagree		39

Other1 means small businesses and informal employment. Other2 means selling cultural products, paintings, and farm produce to tourists' hotels.

Outreach Programmes in your village?") and whether the respondents were happy or unhappy (Waldχ^2 =26.07, df =8, p = 0.001, r^2 =0.19; accuracy =78.5%) (Table 3). However, the model only explained 19% of the variations in the factors influencing locals' responses to COPs (happy or unhappy). This means that other factors, when incorporated into the model, will better explain these variations. In the model, the response on whether local communities were happy or unhappy with COPs initiatives was most explained by respondents' levels of education (primary) (p = 0.001) and age group (elder) (p = 0.008) (Table 3). That means people who had primary education and more, were happier about activities initiated by COPs compared to those who had never been to school (informal education). Furthermore, middle-aged and older people in the study area were happier than young people on various activities initiated by COPs (Table 3).

3.3. Locals' willingness to report poachers to the park authority

Almost half of the respondents (49%, n = 98) were willing to report poachers to the park authority. A binary logistic regression was statistically significant in explaining the willingness of the locals to report poachers to the TNP authorities (Waldχ^2 =18.38, df =8, p = 0.02, r^2 =0.12; accuracy =61%) (Table 4). However, the model only explained 12% of the variations in the willingness of the locals to report poachers to the TNP authorities. Additionally, this means that other factors, when incorporated into the model, will better explain these variations. In the model, the response on the locals' willingness to report poachers to the park authority was only explained by education (primary) (p = 0.028). However, village distance from the park boundary was almost significant in explaining the response on the locals' willingness to report poachers to the park authority (p = 0.058). That means, people who had primary education and more, were more likely to be willing to report poachers to the TNP authorities compared to those who had never been to school (informal education) (Table 4). Furthermore, the model revealed that people who lived closer to the park were more likely to be willing to report poachers than those living at further distances from the park boundary (Table 4).

4. Discussion

Understanding the relationship between local communities and park authorities is critical, given the importance of local communities living adjacent to parks (Kideghesho, 2006; Mbise, 2018; Sosiya, 2016). Globally, especially in the developing world, a participatory approach has proved successful in bringing protected area managers and local communities to the same table, which ultimately reduced locals' hostility toward conservation initiatives (Bennett, 2016; Davis, 2011; Egli et al., 2018; Infield and Namara, 2001; Karanth et al., 2012; Kideghesho, 2006; Tchakatumba et al., 2019). For instance, in Tanzania, to replace the colonial approach, community outreach programmes (COPs) began in the 1970 s by involving a few protected areas, such as the Ngorongoro Conservation Area (Gillingham and Lee, 1999; Kideghesho, 2006; Sosiya, 2016).

Most people in the surveyed villages perfomed farming activities and a few engaged in animal husbandry to earn their livelihoods. In addition, villages that were found in the western part of the park engaged in farming activities (T. Sosiya personal observation). Due to human population increases, demand for land in the villages has increased which compromise some conservation initiatives (F. P. Mbise personal observation). For instance, Mwikantsi village decided to change its border by keeping approximately 4400 ha of land between it and the park boundary as a buffer zone. However, the village government did not support the idea and decided to divide the land among the youths as they did not have enough land for farming activities (Sosiya, 2016).

Education plays a central role in understanding how different activities performed by locals are related to conservation activities (Ardoin et al., 2020). Local people with formal education were happier about different activities initiated by the Community Outreach Programme and were more likely to be willing to report poachers to park management. Furthermore, people with secondary education or higher appreciated receiving benefits more than those with primary education or no formal education. Moreover, educated people are more active in participating in different activities related to conservation (Ardoin et al., 2020). The study also identified an interesting fact: middle-aged and older people were happier about various activities initiated by COPs than young people. This could be influenced by the fact that older people in the area have a long history with the area, whereas young people may be less interested in

Table 3
A model output from a binary logistic regression analysis assessing factors that influenced responses regarding COPs ("are you happy with conservation activities initiated by Community Outreach Programmes in your village?") whether the respondents were happy (yes) or unhappy (no) with its initiatives. Significant effects are depicted with asterisks (see Table 2 for an explanation of variables).

		Estimate	SE	z value	df	P value
Intercept		1.34	0.78	2.92	1	0.087
Village distance (km)		-0.09	0.15	0.40	1	0.524
Age	Reference:Youth					
	Middle-aged	-1.33	0.69	3.70	1	0.054 *
	Elder	-1.97	0.74	7.07	1	0.008 **
Gender	Reference:Female	0.59	0.39	2.31	1	0.128
Education	Reference:Secondary graduate					
	Never attended school	-1.91	0.77	6.16	1	0.013 *
	Primary graduate	-1.40	0.43	10.79	1	0.001 **
Economic activity	Reference:Other[1]					
	Farming	-0.46	0.72	0.41	1	0.522
	Pastoralism	-1.48	1.15	1.65	1	0.199

Table 4
A model output from a binary logistic regression analysis assessing locals' willingness to report poachers to the park authorities (yes/no) as a dependent variable. A significant effect is depicted with an asterisk (see Table 2 for an explanation of the variables).

		Estimate	SE	z value	df	P value
Intercept		-1.98	0.68	8.36	1	0.004
Village distance (km)		0.23	0.12	3.60	1	0.058
Age	Reference:Youth					
	Middle-aged	0.87	0.59	2.16	1	0.141
	Elder	0.82	0.61	1.79	1	0.181
Gender	Reference:Female	0.47	0.34	1.88	1	0.170
Education	Reference:Secondary graduate					
	Never attended school	0.95	0.57	2.79	1	0.094
	Primary graduate	0.83	0.37	4.82	1	0.028*
Economic activity	Reference:Other[1]					
	Farming	-1.07	0.59	3.28	1	0.070
	Pastoralism	-0.39	0.69	0.32	1	0.569

conservation activities and their surroundings.

When local people receive benefits from the park and are actively involved in project activities, their relationship with the park improves (Abukari and Mwalyosi, 2020; Kideghesho, 2006; Sosiya, 2016). The appreciation of benefits associated with the presence of the park and the active involvement of local people in the COPs will have positive effects on shaping their views toward conservation activities (Bennett, 2016; Sosiya, 2016). Therefore, when park authorities share benefits and involve local people in developing different projects that address their basic needs, COPs will normally receive more support from local people. TNP is an icon to the community, as it facilitates employment opportunities (direct and indirect) for work and to sell farm produce in tourist hotels and lodges. The benefits related to tourism activities around protected areas have an impact on improving relationships between local people and the management of protected areas (Abukari and Mwalyosi, 2020; Kideghesho, 2006; Newmark et al., 1993; Sekhar, 2003). In the case of Tanzania, 25% of tourism income goes to locals (Lobora, 2016; Sosiya, 2016). A study conducted in Serengeti National Park showed that only 14 of the 126 villages surrounding the park benefited from COPs (Kideghesho, 2006; Sosiya, 2016). In that circumstance, negative conservation attitudes become common in societies when benefits are unequally distributed among households (Davis, 2011). Additionally, these benefits are not consistent each year, as they depend on revenues collected from tourism activities (Lobora, 2016; Mashauri, 2017).

People who live closer to protected areas benefit more than those who live further away from the park boundary (Croucher, 2020). According to this study, people who live closer to protected areas are more likely to report poachers (Sosiya, 2016), most likely because they receive more benefits and feel more connected to the park than people living further away. When local people are not satisfied with community outreach programme initiatives and conservation benefits, their willingness to report poachers also decreases. Unwillingness to report poachers has a huge implication in explaining how strong the relationship is between park authority and locals. Apart from COP implementation since 1992, COPs have not achieved their goal, as the gap between parks and local communities continues to grow (Sosiya, 2016; TANAPA, 2021).

5. Conclusion

People with formal education were happier about various activities initiated by the Community Outreach Programme and were more likely to be willing to report poachers to park management. Furthermore, middle-aged and older people in the study area were happier about various activities initiated by COPs than young people. Therefore, to enhance mutual cooperation between parks and local communities, all people in the area should be actively involved in different conservation activities. For instance, most respondents who received benefits and participated in COPs were happier with the conservation activities in their area. Sosiya (2016) observed the same trend, in which active community participation increased local people's happiness toward COPs.

The study, like most others, had some limitations, primarily due to time and funding constraints, as well as inaccessibility to the villages. The study admits the limitation of data precision due to the small sample size and unequal sample weight, especially on ethnicities and economic activities performed by local communities (pastoralists and farmers). For that reason, conclusions derived from this study should not be generalized. In addition, due to the small sample size, future studies should be more representative by having an equal sample weight. These future studies should focus on understanding more factors that might influence variations in people's happiness with conservation activities and willingness to report poaching incidents, perceived concerns of the local communities, power relations, locals' involvement, and the best way that both actors will benefit.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Data will be made available on request.

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Ethical standards

We obtained permission from relevant authorities in Tanzania. We also obtained permission from each village and respected local culture and beliefs. We introduced each respondent to the study objective and asked if they were ready to participate. All respondents agreed and were assured of anonymity. To respect the culture, more males than females were interviewed because, according to their culture, men speak on behalf of the household. Therefore, we interviewed females only in the absence of their husbands. According to Tanzanian regulations, there is no need for any special ethical permits when people agree, and their identity is not revealed.

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